MAY 29 1929

UNITED STATES NAVAL INSTITUTE PROCEEDINGS

Vol. 55 JUNE, 1929 No. 316

Contents

The Navy and Public Indoctrination.—Knox	479
An Incident in the Founding of the American Navy.—Bolander	491
The Changing Naval Academy: A Retrospect of Twenty-five years.—Alden	495
Training Reservists Aboard Destroyers.—Field	502
Gunnery Problems of 1783.—Moon	507
Airplane Hydrography.—Samuels	509
A Walk Through Annapolis in Bygone Days.—Magruder	511
Frozen Toes But Not Cold Feet.—Brandt	518
A New Line-of-Position Plotter.—Stetson	521
The Siege of Tsingtao.—Perry	524
Discussions	527
Professional Notes	530
Notes on International Affairs	549
Book Reviews	555
Secretary's Notes	563

Gulf Products . .

are manufactured under the careful supervision of skilled chemists . . . this guarantees quality and uniformity in

NO-NOX
Motor Fuel

Supreme Motor Oil
Fuel Oil, Gas Oil, Diesel Oil

That Good
Gulf Gasoline

Gulfpride Oil

Gulf Refining Company

General Sales Office: **PITTSBURGH, PA.**

District Sales Offices

New York Philadelphia Louisville Boston Atlanta New Orleans Houston

UNITED STATES NAVAL INSTITUTE PROCEEDINGS

For the advancement of professional, literary and scientific knowledge in the Navy.

June, 1929

Edited by CAPT. R. C. MACFALL, U.S.N.
Ass't Editor—LIEUT. COMDR. A. H. ROOKS, U.S.N.

Associate Editors
COMMANDER F. W. ROCKWELL, U.S.N.
LIEUTENANT COMMANDER A. C. MCFALL, U.S.N.
PROFESSOR ALLAN F. WESTCOTT, U.S.N.A.
PROFESSOR HENRY BLUESTONE, U.S.N.A.

United States Naval Institute
Publication Office: Menasha, Wisconsin
Editorial and Business Office: Annapolis, Maryland
Advertising Department: McGill Bldg., Washington, D.C.

Navy Model P S 2

SIKORSKY AMPHIBION

Ideal for Ambulance Purposes

Because of its safety, speed, comfort, roominess, and its ability to land or take off on water or on land with equal facility, the Sikorsky Amphibion is ideal for ambulance purposes. It may be used in transporting emergency cases from ship to shore and in many other ways.

In peacetime, as an aid to sufferers from floods and other disasters, it will prove invaluable. Doctors, nurses, medical supplies, clothing and food may be carried into stricken areas, and the injured and those in peril given succor at a time when minutes may mean the difference between life and death.

On occasions such as these the notable services of the Navy and Coast Guard have won world-wide recognition.

SIKORSKY AVIATION CORPORATION

College Point, Long Island, N. Y.

June
Vol. No. 55, No. 6

Contents

1929
Whole No. 316

THE NAVY AND PUBLIC INDOCTRINATION 479
By Captain Dudley W. Knox, U. S. Navy (Retired)

AN INCIDENT IN THE FOUNDING OF THE AMERICAN NAVY 491
By L. H. Bolander

THE CHANGING NAVAL ACADEMY: A RETROSPECT OF TWENTY-FIVE YEARS. 495
By Professor Carroll Storrs Alden, U. S. Naval Academy

TRAINING RESERVISTS ABOARD DESTROYERS 502
By Lieutenant Commander Richard Stockton Field, U. S. Navy

GUNNERY PROBLEMS OF 1783 507
By Lieutenant Commander D. P. Moon, U. S. Navy

AIRPLANE HYDROGRAPHY 509
By Lieutenant L. M. Samuels, U.S.N.R.

A WALK THROUGH ANNAPOLIS IN BYGONE DAYS 511
By P. H. Magruder, Secretary, U. S. Naval Academy

FROZEN TOES BUT NOT COLD FEET 518
By Lieutenant Commander George E. Brandt, U. S. Navy (Retired)

A NEW LINE-OF-POSITION PLOTTER 521
By Harlan T. Stetson

THE SIEGE OF TSINGTAO 524
By Lieutenant Emil B. Perry, U. S. Navy

DISCUSSIONS 527

PROFESSIONAL NOTES 530

NOTES ON INTERNATIONAL AFFAIRS 549

BOOK REVIEWS 555

SECRETARY'S NOTES 563

The writers only are responsible for the contents of their respective articles.

Editor, Captain R. C. MacFall; Assistant Editor, Lieutenant Commander A. H. Rooks.
Published monthly at 450 Ahnaip St., Menasha, Wis.
Executive, Editorial, and Business Offices, U. S. Naval Institute, Annapolis, Md.
Advertising Department, McGill Building, Washington, D.C.
Entered as second class matter at the post office at Menasha, Wis., April 4, 1922, and at the post office at Annapolis, Md., under Act of August 4, 1912. Acceptance for mailing at the special rate of postage provided for in section 1103, Act of October 3, 1919, authorized March 13, 1922.
Membership dues (including PROCEEDINGS), $3.00 a year.
Subscription rate, $5.00 a year. (Foreign postage, $1.00 extra.) Single copies, 50 cents.

Copyright, 1929, by U. S. Naval Institute

Officers of the Institute

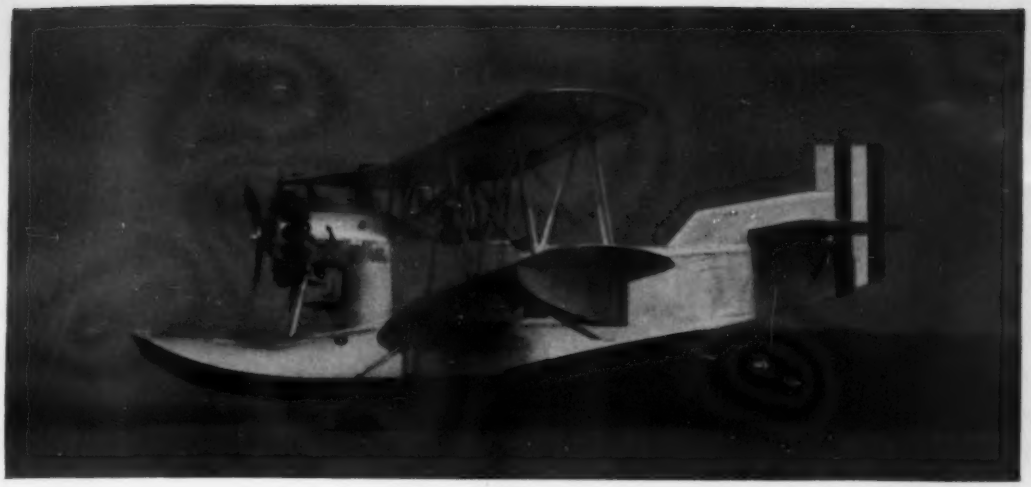
President - - - - REAR ADMIRAL S. S. ROBISON, U. S. NAVY
Vice President - - REAR ADMIRAL W. H. STANDLEY, U. S. NAVY
Secretary-Treasurer - - - CAPTAIN R. C. MACFALL, U. S. NAVY

Board of Control

REAR ADMIRAL S. S. ROBISON, U. S. NAVY *(ex officio)*
REAR ADMIRAL W. H. STANDLEY, U. S. NAVY *(ex officio)*
BRIGADIER GENERAL GEORGE RICHARDS, U. S. MARINE CORPS
CAPTAIN C. P. SNYDER, U. S. NAVY
CAPTAIN E. J. KING, U. S. NAVY
CAPTAIN A. T. CHURCH, U. S. NAVY
COMMANDER H. S. HOWARD (CC), U. S. NAVY
COMMANDER OSCAR SMITH, U. S. NAVY
CAPTAIN R. C. MACFALL, U. S. NAVY *(ex officio)*

Past Presidents

ADMIRAL DAVID D. PORTER, U. S. NAVY, 1873
REAR ADMIRAL JOHN L. WORDEN, U. S. NAVY, 1874
REAR ADMIRAL C. R. P. RODGERS, U. S. NAVY, 1875-78
COMMODORE FOXHALL A. PARKER, U. S. NAVY, 1878-79
REAR ADMIRAL JOHN RODGERS, U. S. NAVY, 1879-82
REAR ADMIRAL C. R. P. RODGERS, U. S. NAVY, 1882-83
REAR ADMIRAL THORNTON A. JENKINS, U. S. NAVY, 1883-85
REAR ADMIRAL EDWARD SIMPSON, U. S. NAVY, 1885-87
REAR ADMIRAL STEPHEN B. LUCE, U. S. NAVY, 1887-98
REAR ADMIRAL WM. T. SAMPSON, U. S. NAVY, 1898-1902
REAR ADMIRAL H. C. TAYLOR, U. S. NAVY, 1902-04
REAR ADMIRAL C. F. GOODRICH, U. S. NAVY, 1904-09
REAR ADMIRAL RICHARD WAINWRIGHT, U. S. NAVY, 1909-11
REAR ADMIRAL BRADLEY A. FISKE, U. S. NAVY, 1911-23
REAR ADMIRAL WILLIAM L. RODGERS, U. S. NAVY, 1923-24
REAR ADMIRAL HENRY B. WILSON, U. S. NAVY, 1924-26
REAR ADMIRAL HILARY P. JONES, U. S. NAVY, 1926-28
REAR ADMIRAL EDWARD W. EBERLE, U. S. NAVY, 1928-29



The Navy's Proven Amphibian

WITH over four million miles of service flying to it's credit, the Loening is the most thoroughly developed amphibian in the world.

It's proven features are—all around performance—ease of handling—and low maintenance.

Due to the great strength of it's hull, the Loening can land in seas in which no other amphibian will survive—it has frequently been landed wheels up on dry land without any damage.

For these and many other reasons it is known as "The plane that does the Hard Work for America."

LOENING AERONAUTICAL ENGINEERING CORP.

Thirty-First Street and East River, New York City

Division of Keystone Aircraft Corp.

PERHAPS YOU ARE ELIGIBLE TO JOIN THE

U. S. NAVAL INSTITUTE

Founded in 1873

For the Advancement of Professional, Literary and Scientific Knowledge in the Navy

---

Admiral David D. Porter was
its first President

For over half a century

U. S. Naval Institute Proceedings

has been the *Navy's Forum*

Published Monthly—Illustrated

Are you a member of a yacht club, engineering or scientific society? Are you interested in the sea, in things nautical, in ships, your Navy, radio, aviation, general engineering subjects, foreign affairs and policies? If so you will be interested in belonging to an organization that has had for its Presidents men of the character of Porter, Worden (*Monitor-Merrimac* fame), the Rodgers, Luce, Sampson, Wainwright, and other distinguished fellow countrymen.

How to become an Associate Member—The regular subscription rates to the PROCEEDINGS are $5.00 per year. You are eligible to become an Associate Member if you are "interested in the objects of the Institute" and are an American citizen of good standing and character in your community (write Secretary for further information as to details). The annual dues, $3.00, are the same as paid for regular membership by officers of the U. S. Navy, Marine Corps and Coast Guard, and entitle you to receive each month at no additional cost our magazine. Reserve officers of all branches of U.S. services are eligible for Associate Memberships.

The pages of the PROCEEDINGS, of which this issue is a fair sample, cover a wide range of interesting subjects, accompanied by beautiful illustrations, pertaining to the sea. The contributors, both foreign and American, officers and civilians, many of whom are distinguished in their specialties, so write as to interest both the associate and regular members as well as lay readers. In addition to the leading articles in the main body of the magazine, there are departments under the following headings: Discussions, Professional Notes, Notes on International Affairs, Book Reviews, and Secretary's Notes. For further information address Secretary-Treasurer.

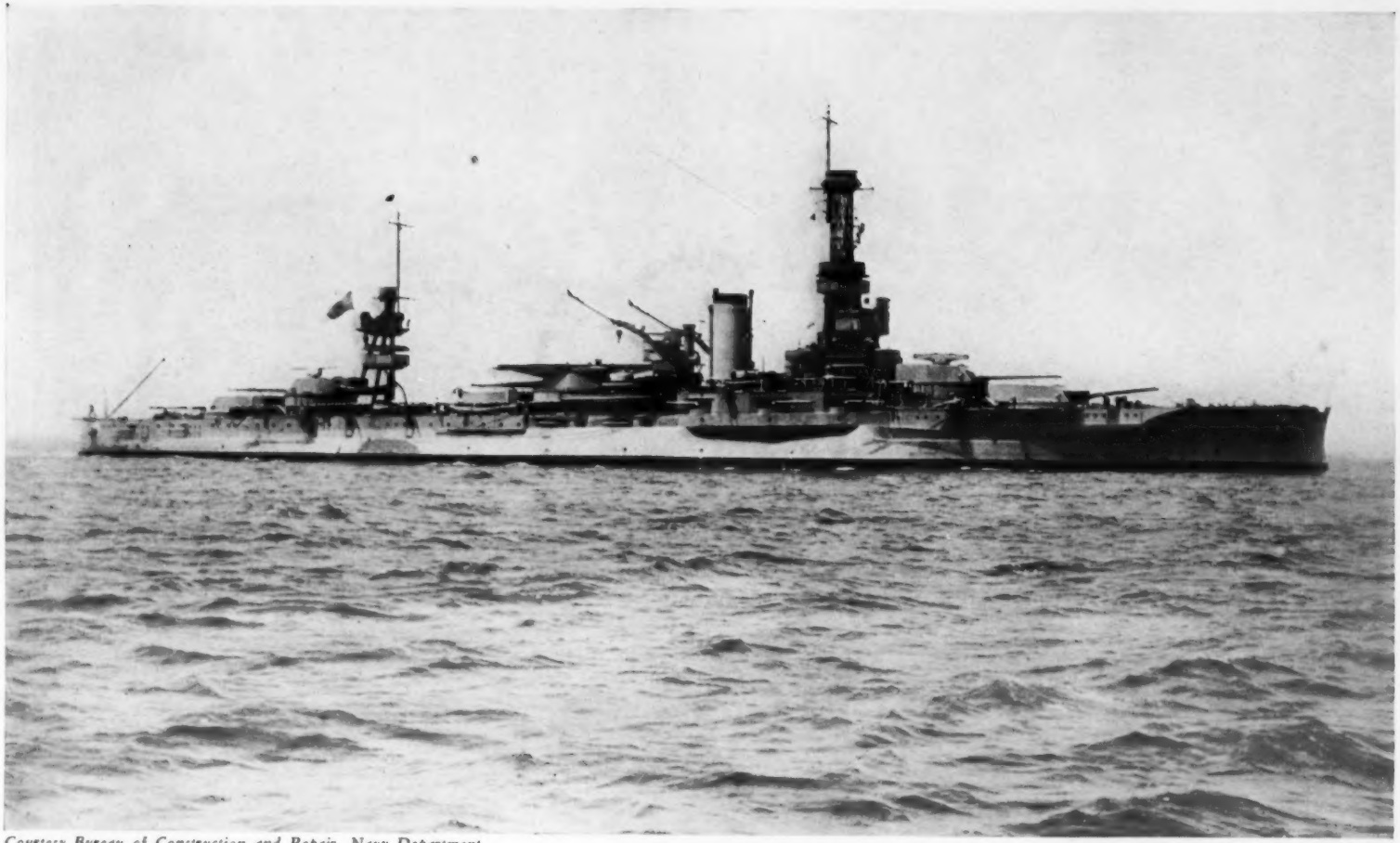
ANNUAL DUES $3.00 (*Including Proceedings*)

Address SECRETARY-TREASURER, U. S. NAVAL INSTITUTE
ANNAPOLIS, MD., U.S.A.

Courtesy Professor H. F. Krafft

"SAILS SET TO THE SKY"

U.S.S. *Chesapeake* (later U.S.S. *Severn*), practice ship of the midshipmen of twenty-five years ago.

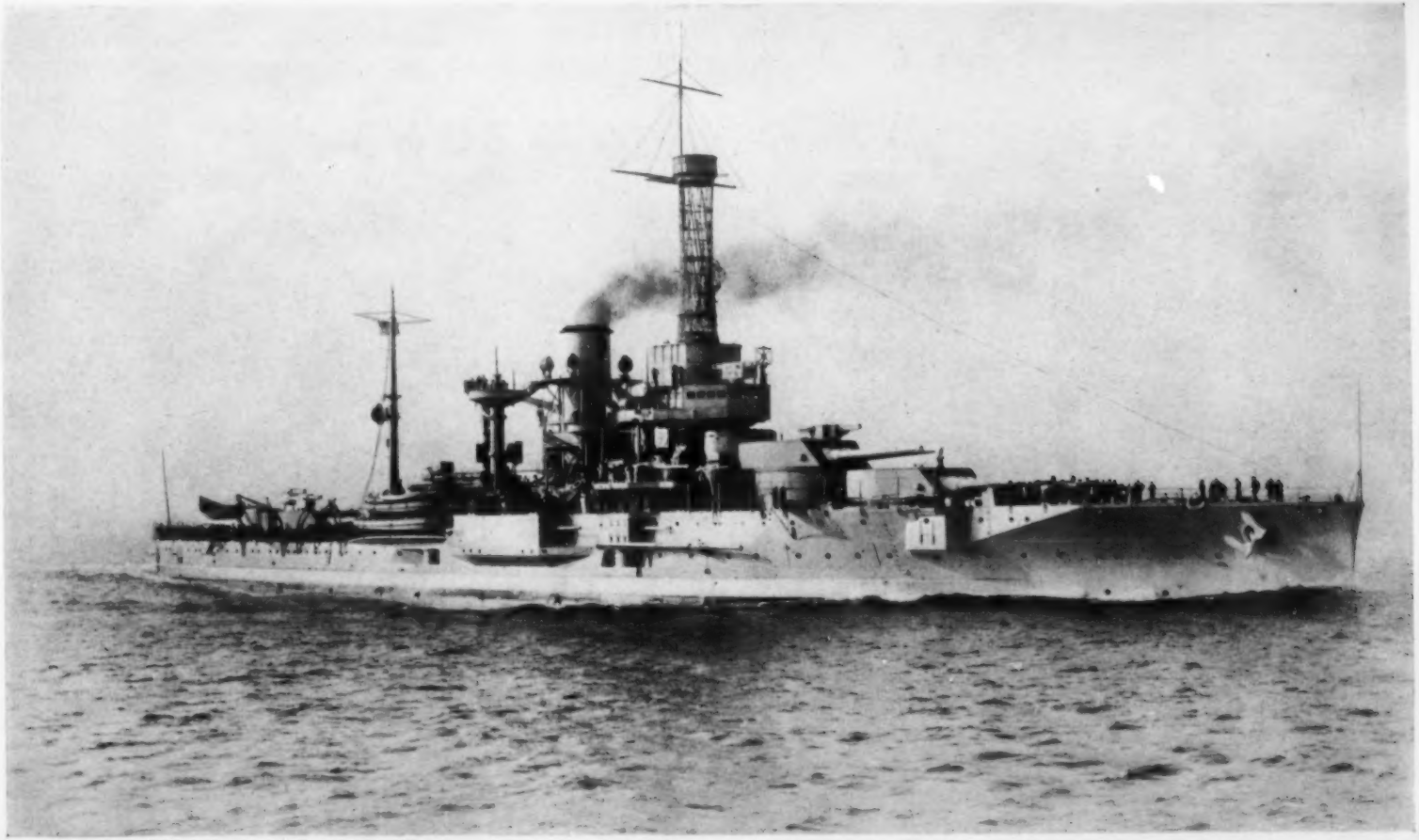


Courtesy Bureau of Construction and Repair, Navy Department

U.S.S. *ARKANSAS*

Flagship of midshipman practice squadron which will visit various European ports this summer.

Flagship of midshipman practice squadron which will visit various European ports this summer.



Courtesy Bureau of Construction and Repair, Navy Department

U.S.S. *UTAH*

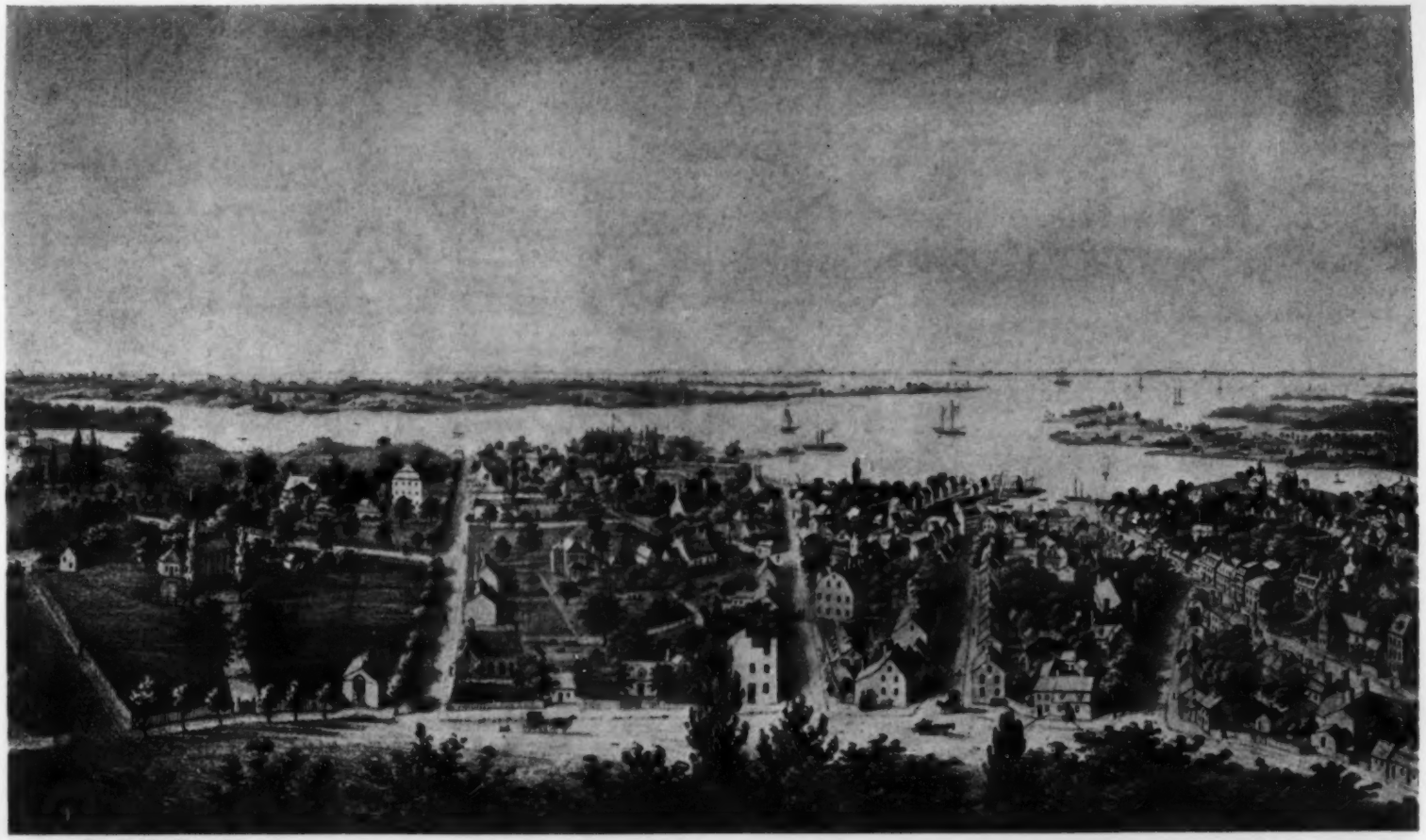
Another ship of this year's practice squadron.

Courtesy Bureau of Construction and Repair, Navy Department

U.S.S. *FLORIDA*

The third ship of this year's practice squadron.

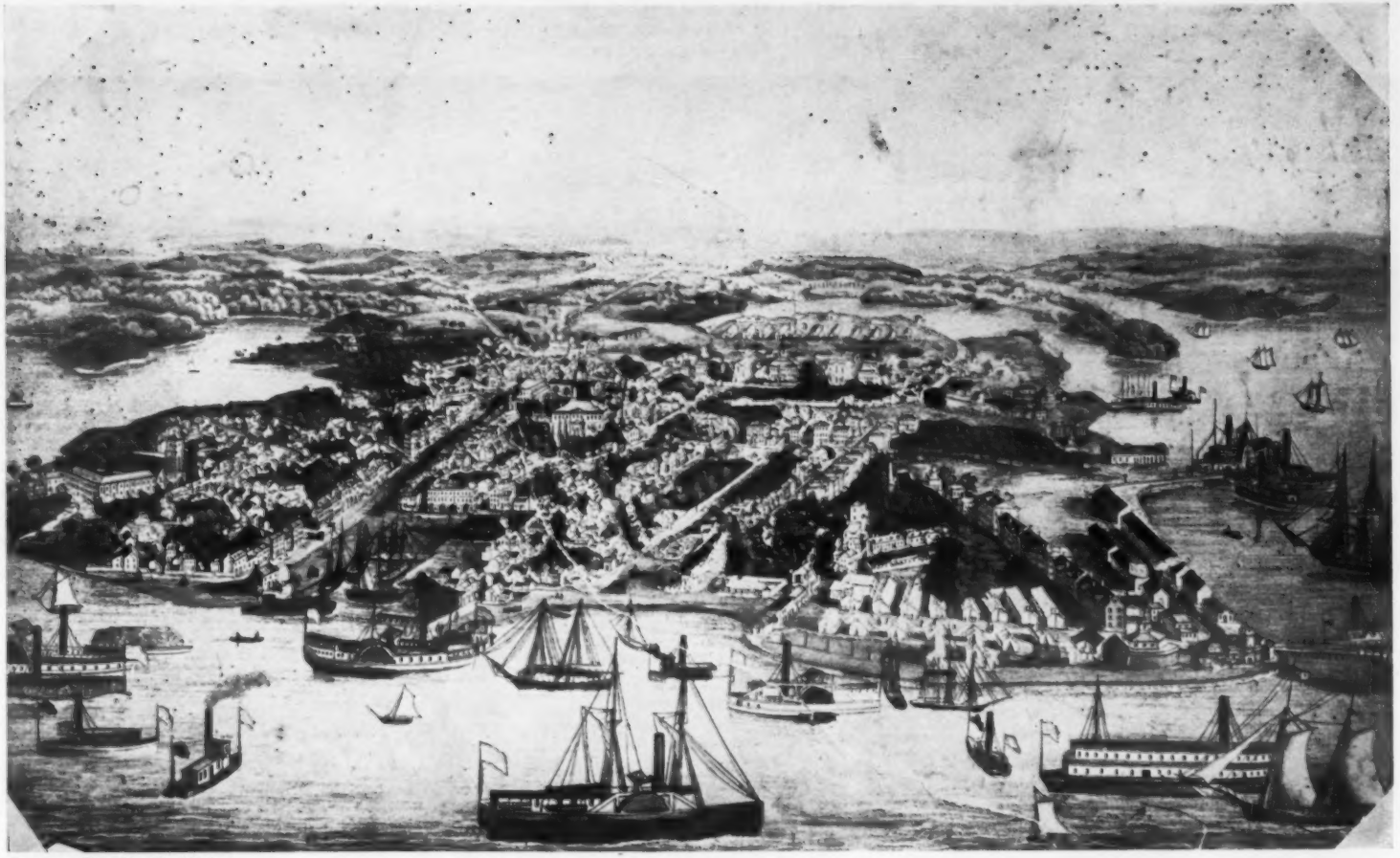
The third ship of this year's practice squadron.



Courtesy Mr. P. H. Magruder

A VIEW OF ANNAPOLIS AT ABOUT THE TIME THE NAVAL ACADEMY WAS ESTABLISHED THERE IN 1845

(See article "A Walk Through Annapolis in Bygone Days," page 511, this issue.)



Courtesy Mr. D. H. Nichols

BIRD'S-EYE VIEW OF ANNAPOLIS IN 1863

During the Civil War the Naval Academy and St. John's College were used as hospitals. In the central background can be seen the tents of a camp where often as many as forty thousand paroled Union soldiers were held awaiting exchange. Note: These Union soldiers, captured by the Confederate Army, were paroled to Union custody until the Union troops had Confederate prisoners available for exchange.

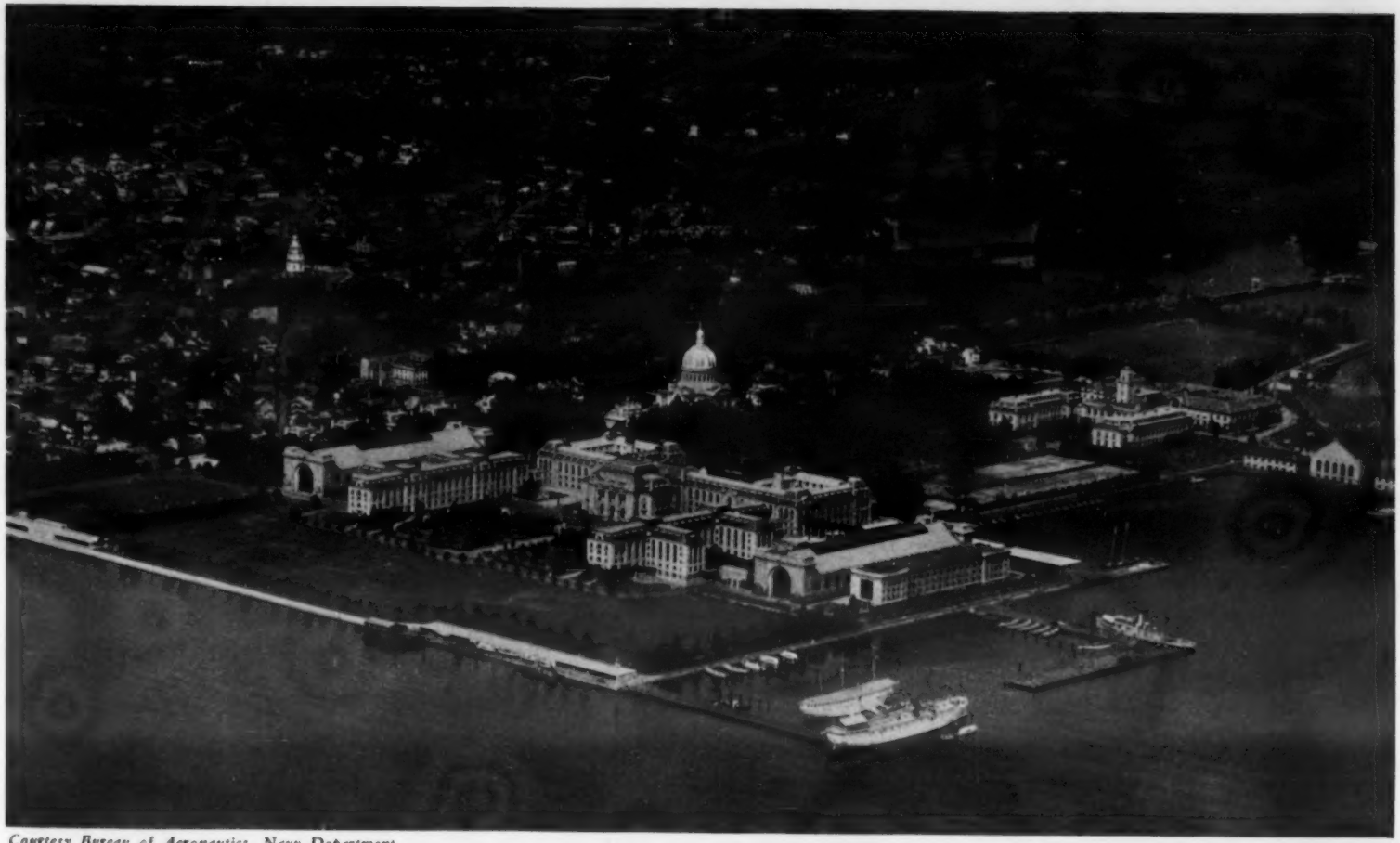
BIRD'S-EYE VIEW OF ANNAPOLIS IN 1863

During the Civil War the Naval Academy and St. John's College were used as hospitals. In the central background can be seen the tents of a camp where often as many as forty thousand paroled Union soldiers were held awaiting exchange. Note: These Union soldiers, captured by the Confederate Army, were paroled to Union custody until the Union troops had Confederate prisoners available for exchange.

Courtesy Mr. D. H. Nichols

VIEW OF ANNAPOLIS AND HARBOR DURING THE WINTER OF 1876-1877

Taken from the dome of the State House. The boats in the harbor are probably dredgers, as at that time Annapolis was a large shipping center for oysters.



Courtesy Bureau of Aeronautics, Navy Department

A VIEW OF ANNAPOLIS AND THE NAVAL ACADEMY OF TODAY

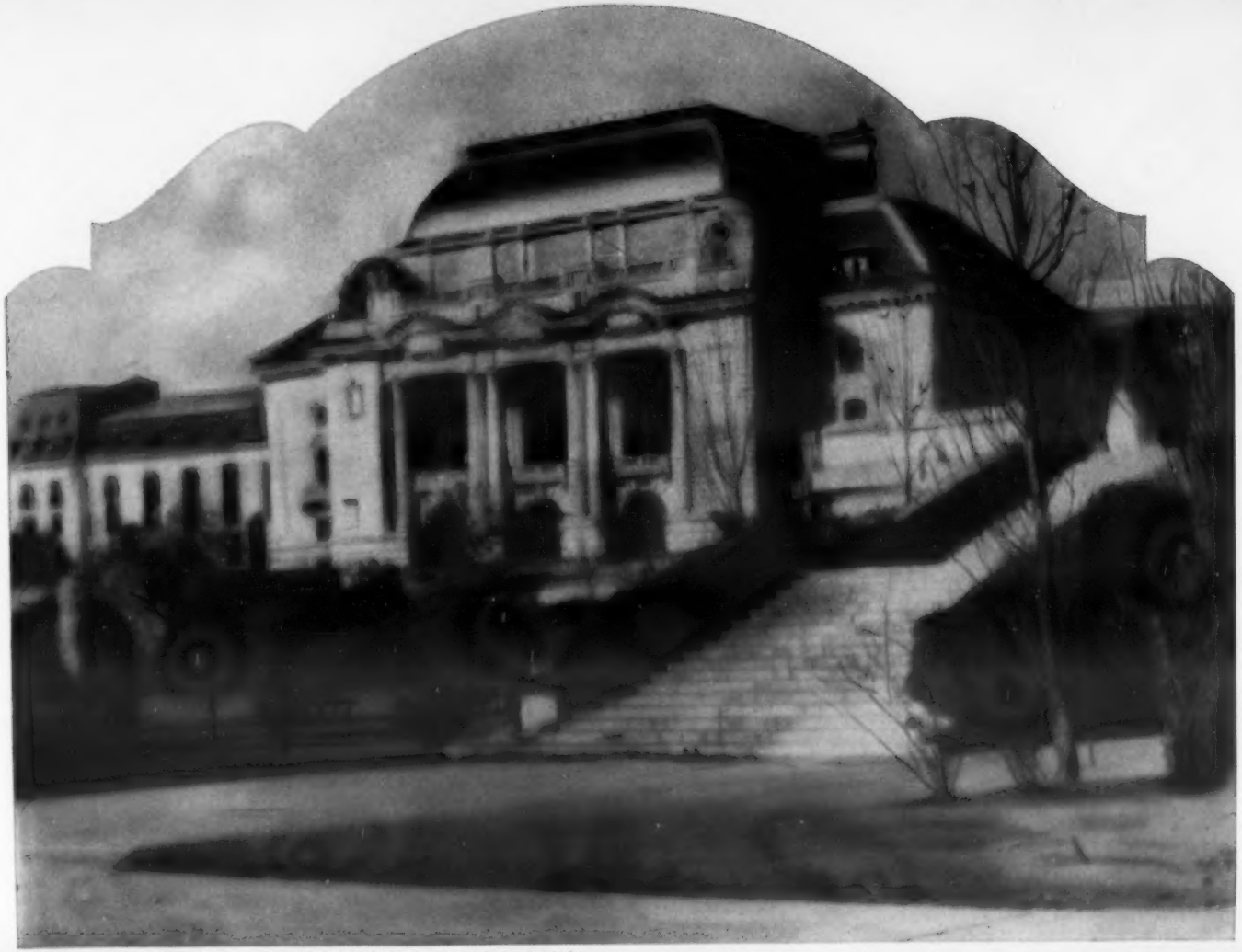
A VIEW OF ANNAPOLIS AND THE NAVAL ACADEMY OF TODAY

Courtesy Rear Admiral W. W. Kimball, U. S. Navy (Retired) *Photo by N. S. Bowdish*

CLASS 1869, U.S.N.A.

A reunion of this class, held in Washington, April 27, 1929, *sixty years after graduation*, probably sets a record in class reunions, at least a record as far as the Naval Academy is concerned. A report of the meeting will be found in the Secretary's Notes of this issue. Such spirit cannot be denied!

REAR ADMIRAL S. S. ROBISON, U. S. NAVY
Superintendent, U. S. Naval Academy, and President of the U. S. Naval Institute.



Courtesy of Lucky Bag Committee Class of 1928, U. S. N. A., Copyrighted

MEMORIAL HALL
U. S. Naval Academy

UNITED STATES NAVAL INSTITUTE PROCEEDINGS

Vol. No. 55, No. 6 JUNE, 1929 *Whole No. 316*

HONORABLE MENTION, 1929

The Navy *and* Public Indoctrination

By CAPTAIN DUDLEY W. KNOX, *U. S. Navy (Retired)*

Public opinion is the mainspring of national life

DURING a recent debate in the British Parliament a prominent member urged that "a hundred years of propaganda would be undone" unless the pending measure for new naval construction was adopted. There was no sinister implication in his use of the word "propaganda." Doubtless the more palatable term "indoctrination" would have served his meaning equally well. Neither was there any suggestion of irregularity in the remark, but rather an assumption of normality.

The average American may be somewhat surprised in these days when propaganda is growing to be regarded with scorn and supposed to be tinctured with iniquity, to learn that apparently for a century there has been a strong and probably well-organized effort in England to influence public opinion in favor of a large navy. But let us remember that the motive of propaganda is not necessarily ulterior or bad, and let us reflect that large masses of people cannot come to a sound and reasonably unified opinion except by some sort of indoctrinating process. How else could British subjects, almost to a man, strongly and continuously hold the view that British dominance on the sea is essential to their "trade protection," prosperity, and to national, as well as empire, "security"? The fact that such has been the attitude of British people over many decades is in itself sufficient evidence of long-continued propaganda to that end.

When we turn back the pages of British history for one hundred years and survey the unparalleled growth, "under the Navy's shield," from humble beginnings to marvellous wealth and power, we begin to realize the potency of the indoctrination, and to recognize the skill and wisdom of the leadership which gave it to the nation.

Naturally there were many elements other than naval involved in the rapid evolution of Britain into the greatest of world states. A century ago the long Napoleonic wars were recent history, and had left England's commercial rivals in poor economic circumstances compared with herself. Also she had already attained the position of the world's principal marine "carrier," together with that of the strongest naval power. Above all, her industrial revolution had gained such headway, under the impulse of mechanical invention, the utilization of steam power, and the development of the factory system, that industrial capacity far exceeded home needs and urgently pressed for foreign markets.

Yet all of this progress fell very short of meeting the potentialities of the case, and

Courtesy of Lucky Bag Committee Class of 1928, U. S. N. A., Copyrighted
MEMORIAL HALL
U. S. Naval Academy

in 1820 the London merchants, stimulated by newly developed political economy, sponsored some very drastic commercial reforms, of which free trade was the underlying principle. The matter was made the subject of study by a committee of the House of Commons and subsequently by a royal commission. It was found that nearly a thousand laws were in force "hindering trade in every direction." Within a few years sweeping, fundamental changes were made in the whole commercial system, the most important among which had in view the removal of all restraints upon maritime intercourse with the outside world, and hence the promotion of further industrial development at home.

To the writer's knowledge it has never been pointed out that this step marked an entirely new relationship between maritime power and national economics. From the Dutch back to the Phoenicians the marine carrying trade was engaged in and fought for principally on account of the profits to be derived from transportation as a business within itself, and from the very lucrative bartering of goods collected in cheap, and distributed in dear, markets. As inherited by England, the carrying trade was thus merely one among many businesses, and the numerous restraints against other nations engaging in it were imposed with a view to making its own shipping business prosperous. As transformed by England after 1820, the carrying trade became an adjunct of British business in general, a promoter of prosperity for all other business and for the nation as a whole.

In taking this course of removing the old navigational restrictions there were some fears as to the fate of the British merchant marine. But it was very strongly intrenched, and it was argued that increased trade incident to the stimulation of general business would enable it to withstand foreign competition. Greater fears were entertained for the fate of the Royal Navy, upon whose protection the whole new economic plan vitally rested, and whose maintenance had been derived from various tariffs and trade restrictions which were to be abolished. It is always difficult to support a navy out of funds derived from more direct taxation unless the need of a navy is clearly recognized by the taxpayer, among whom some propaganda may, therefore, be necessary.

Public indoctrination in the need of naval maintenance became of still greater importance in England after 1832, with the passage of the Reform Bill and subsequent similar measures enfranchising a large electorate. Previous to that time control had been exercised by a small group of aristocrats. Thereafter Britain became democratized, and public opinion more and more governed public expenditure.

Here we see the origin of the "one hundred years of propaganda" referred to in the opening paragraph. Its aim was to assure public support of a navy adequate to protect the economic needs of an empire—a navy that would take its place as one essential element in a vast national commercial enterprise, in which the other major factors were (1) rapidly expanding industrial production, (2) preëminence in the world's water transport, and (3) colonial dependencies and free access to other markets and sources of raw materials. Thus was the huge wealth cycle to be completed by naval supremacy. Thus has Britain developed wealth, territory, and power far exceeding the dreams of even those men of genius who laid the great foundations.

II.

It would be difficult to refute the thesis that freedom of ocean transport is essential to the prosperity of most nations—especially those which are largely industrialized. If the factory cannot be supplied with all necessary raw materials, or its products cannot be marketed, both of which must follow a serious interference with sea-borne trade, the factory must close down. Then follows a cycle of distress which involves not only the factory employees themselves, and their immediate dependents, but also many other persons occupied in producing and selling goods to them. An era of idleness in the factory automatically brings "hard times" to the country at large.

While such a doctrine is readily understood by students and men of wide affairs, it may often seem intricate and doubtful to persons of little education, especially if their daily pursuits are more manual than mental in nature. To the wage-worker strenuously occupied during six long days of each week with the load of a wheelbarrow, the clinkers on the grate, or "tolerances" of a thousandth

of an inch, there must seem little relation between his job and the deep blue sea's path to foreign ports. Yet it was upon the votes of such men that funds for the Royal Navy more and more depended after the passage of the English Reform Bill in 1832. So it must of necessity be in every industrialized democracy.

The very foundations of democratic government obviously rest upon the ability of the electorate to make sound decisions, which presupposes a sufficiency of not only intelligence but information also. Herein lies the complete justification of education, publicity, propaganda, indoctrination, or whatever we may choose to call the awakening of large masses of people to an understanding of their own legitimate needs. This applies particularly to those aspects of national life which are at once of fundamental importance and also normally difficult for the average citizen to comprehend. One of these aspects is the inherent need of maritime strength in order that industry may survive and national prosperity continue.

No one could deny the great honor and credit which is due to those farsighted leaders of British opinion who have kept their people in the van of wealth and progress in every form for one hundred years. The necessary indoctrination has covered all essential phases of national life, but in none has it been so earnest, so persistent, nor so successful, as in that of supremacy on the sea—including both the naval and merchant marine elements.

"Trade protection" has been the keynote of the naval indoctrination of the British public from the beginning and so continues to the present day. Trade protection was the main justification advanced for naval appropriations in 1832. Trade protection was the principal reason given by the British government in 1927 for their unwillingness to accept parity with the United States at Geneva. The pleas of security against invasion and general preparation for war have naturally been invoked also, but more as collateral reasons for maintaining a navy, the prime function of which was steadily represented as the protection of ocean trade routes against interruption in any form. Let us not quarrel with this doctrine, which is entirely sound as measured by the principles of both economic and naval strategy. Both in peace and war the navy's cardinal mission is the adequate control of sea communications.

The task of putting and keeping in the minds of the British public the basic close relation between national economic welfare and the maintenance of naval power had to be performed by the intellectuals. Originally they had at hand the pioneer studies of such master minds as that of Adam Smith in the realm of political economy. Their start was further favored by the extraordinary national economic structure which the administrative genius of Mr. Huskisson had erected before 1830 in every commercial field. Space forbids considering the publicity leadership of more than two men, who may be taken as representative of a large group spanning nearly a century.

Outstanding among the early propagandists was Cobden. Himself a successful manufacturer, and an occasional member of Parliament, after 1835 he devoted most of his time and effort to indoctrinating the country. He considered that it was "natural" for Great Britain "to manufacture for the world in exchange for her free admission" of the agricultural products and raw materials from other nations. Free trade was the cardinal principle of his doctrine, and he was ardent in urging that the "logical complement of free trade" was the "promotion of peace and the (international) reduction of naval and military armaments." But mark well that at the same time he was an "outspoken advocate of an irresistible British Navy" as a shield to commerce.

To these ends, in 1846, he went on what he himself characterized as "an agitating tour" through the continent of Europe, which met with extraordinary success everywhere. He made several other extended visits to Europe and two to the United States, and at the time of his death in 1865 was among the best-known and most highly esteemed men in the world. In 1866 his friends founded the Cobden Club in London as "a center for political propaganda to promote free-trade economics." Its great influence and activity continue to the present day.

The miracle of "Little England" transforming herself within a generation into an immense industrial center "under the Navy's shield" was the main impulse behind the movement which began in about 1870 for modified "Cobdenism" through a closely knit empire. Markets and raw materials

had to be more positively assured if England's extraordinary industrial development was to further advance and become stabilized. The leadership in this was taken up by the elder Chamberlain, more of a politician but not less a propagandist than Cobden, to whose mantle he succeeded. His doctrine was well summed up by himself in 1886 when responding to the toast, "Commerce and the Empire." Praising the ability of the toastmaster to compress such a wealth of meaning into virtually two words, he suggested that even greater brevity was possible, and that a single word would suffice, since "Commerce *is* the Empire." The great influence of Chamberlain continued until his death in 1914, and one of his ablest seconds has been Rudyard Kipling.

In retrospect one is compelled to marvel at the sagacity of those British leaders who formulated the gospel of Production, Ocean Transport, Foreign Markets, Irresistible Navy, which so quickly brought undreamt wealth to their people. Not less astonishing is their skill in grappling with the new problem of indoctrinating millions of slow-thinking, skeptical voters with what then seemed to be such a radical gospel. Who is there to question the ethics of resorting to such propaganda among people in their own interests?

Their doctrine of a supreme navy, not to make war but to preserve peace, not to be predatory but to shield the free development of commerce, not to unsettle the world but to stabilize it through the promotion of law and order, has been demonstrated as sound. Britain has given us outstanding proof of the fallacy that armaments are necessarily provocative of war. For virtually one hundred years, while possessing much the strongest navy in the world, her government kept free from major wars and used her dominant naval power primarily as a commercial shield, in accordance with the doctrine of "trade protection" so wisely propagated. On many critical occasions during this period the mere strength of the Royal Navy was sufficient to deter other nations from undertaking war against her. That she was almost inevitably drawn into the maelstrom of the general European war in 1914 fails to invalidate the principle, or to lend color to a possible charge of broken faith.

III.

We may think of propaganda as not only justified and ethical but actually necessary and beneficial, when conducted by earnest and public-spirited apostles within their own country. What about propaganda carried on in foreign countries? There is no denying that the family of nations has many common interests; that general prosperity and culture thrive best under conditions of stabilized peace; and that good will and coöperation cannot be substituted for suspicion and conflict except through mutual understanding and sympathy. Is not world-indoctrination through international propaganda therefore ethical and praiseworthy?

Such was the view of Cobden on his "agitating tours" throughout the civilized world between 1846 and 1865. Such doubtless was the belief of the Cobden Club which has carried on his work since his death. Such are the arguments advanced in justification of the foreign propaganda now being conducted in this country and elsewhere, on a scale beyond anything the world has seen before, aided by the extraordinary modern expansion of communication facilities.

As an example of the scope of this work the following extracts are quoted from an article published in the July 4, 1919, issue of the London *Times*, written by a regular correspondent of that paper. Its significance is heightened by a supporting editorial in the same issue, and by the great influence of that journal, which was then one of a chain of nearly eighty papers controlled by Lord Northcliffe. It will be recalled that the latter had succeeded Sir Gilbert Parker in charge of British propaganda in the United States, and had been in supreme control of British propaganda in enemy countries during the war, with a staff composed largely of his press associates.

Nothing else is so urgently required as a complete British-American understanding. Only good will that will stand any strain that may be put upon such an understanding will insure world peace. . . . Existing good will . . . has not the strength of fiber to stand heavy strain. . . . . Our two great democracies reflect in their legislation the common thought of the common people. The political leaders in both countries remain leaders only so long as they keep an ear to the ground to discover the direction in which the public is marching. . . . . It is the mass-mind of the British and American democracies that will determine if we shall march together. . . . . Any enduring good will be-

tween the two countries must be rooted in the hearts and minds of all the people.

By efficient propaganda, carried out by those trained in the arts of creating public good will and of swaying public opinion towards a definite purpose . . . . the natural and proper competition of interest between the two countries will be robbed of the poison of ignorant resentment.

What is now needed—urgently needed—is to make a beginning. Efficiently organized propaganda should mobilize the press, the church, the stage and the cinema; press into active service the whole educational systems of both countries, and root the spirit of good will in the homes, the universities, public and high schools and primary schools. It should also provide for subsidizing the best men to write books and articles on special subjects, ... authoritative opinion upon current controversial topics should be prepared both for the daily press and for magazines; histories and text books upon literature should be revised. New books should be added, particularly in the primary schools. Hundreds of exchange university scholarships should be provided. Local societies should be formed in every center to foster British-American good will, in close cooperation with an administrative committee. . . . .

This work cannot be efficiently done by individuals or by small independent societies. It must all be coördinated into one great, steady, efficient effort, and the execution of it be under the direction of men in both countries who are qualified by capacity and experience to sound exactly the right note and to employ the right media to interest the section of the public to which any particular appeal is made. . . . . Ambassadors of good will should be exchanged, to meet the public in our pulpits, on our lecture platforms, and to preside in the lecture rooms of our colleges.

For anyone so inclined it is a simple matter to find striking evidence of this sort of work in progress on a great scale in this country today, in all of the various fields mentioned. Pause for a moment and consider what this means. It is a frank effort to control the "mass-mind" that is "continually shaping the destiny" of the country, through influencing the opinion of legislators and political leaders, who remain in office only so long as they "reflect in their legislation (or executive acts) the common thought of the common people." In other words it aims at governing the country, especially in matters affecting foreign affairs, through propaganda in which foreigners have a large share.

There is no alibi in the above-quoted advocacy of a fair exchange of propagandists between the two countries. The war trained many Englishmen "in the arts of creating public good will" in America, and in "swaying public opinion towards a definite purpose." Sir Gilbert Parker tells us in *Harpers Magazine* (March, 1918, number) that "Practically since the day the war broke out between England and the Central Powers I became responsible for American publicity. I need hardly say that the scope of my department was very extensive and its activities widely ranged." On the other hand the number of Americans familiar with British psychology who are trained in the propaganda art must be extremely small. Even if we would we could not possibly do in England what is being done here. The fact that we are making no parallel effort is conclusively shown by the inconsiderable number of Americans in England who are on newspaper staffs, in pulpits, in professorial chairs, in peace societies, radio broadcasting, etc., compared with the numerous Englishmen so employed here. Moreover the few Americans engaged in such work in England seem to be of a type who feel it necessary to apologize constantly for America. A large reward could safely be offered for the discovery of a British propagandist, or an American employed in British propaganda in this country, who apologizes for Britain. The net result of all that is being done is extremely one-sided.

Anything approaching a complete discussion of the various American peace and other organizations in which foreign influence plays a prominent part would be impossible, within the scope of this essay. Many of them are affiliated with, and some contribute funds to, the "Federal Council of Churches of Christ in America," which is probably the most powerful propaganda organ in the country. It comprises twenty-eight Protestant denominations, whose members are said to number twenty millions, and about eighteen other societies. Its annual expenditures have been estimated to be in excess of half a million dollars, of which a considerable part comes from an endowment reported by the press to have been made in 1926 by Sir Henry Lunn, a wealthy Englishman.

The organization of this "Council of Churches," is very loose except as to the central control. The general council of about five hundred representatives meets but once every four years to pass on broad policies. A smaller, so-called executive committee meets annually. The actual control of current activities is vested in a small group, a large proportion being appointees

A Peaceworker's Manual in Preparation

The peace movement has badly needed a guidebook for workers and speakers that shall cover its many fields of activity. Our Education Secretary, Mrs. Florence Brewer Boeckel, has spent a year compiling such a textbook. Its title is "Between War and Peace." It will be a book of 500 pages. The Macmillan Company is publishing it. It will appear in the early summer.

Our other publications include "Books of Goodwill" for children, a "Calendar of World Heroes," the famous poster "America First" (in service and cooperation), and authoritative pamphlets, posters, and postcards covering many aspects of the peace movement. Our *News Bulletin* has now a paid circulation of 15,000. Our *Bibliography on International Affairs* goes to important libraries. We distributed more than 1,000,000 pieces of literature during 1927.

For 1928

Our Executive Board has voted a budget for 1928 of $113,000. We raised approximately $100,000 in 1927, $60,000 in 1926. A staff of 11 persons in our two offices in Washington and California with 2 stenographers and 14 clerks is kept busy on our varied tasks. We receive from 2,500 to 3,000 communications a month at the Washington office alone. We have 3 speakers in the field.

The special tasks in 1928 will be (1) to promote the substitution of a naval reduction conference for the "big navy" program, (2) to crystallize sentiment favoring a series of treaties between the United States and other countries renouncing war as a national policy, (3) to find the way to break the deadlock on the World Court, (4) to educate on the deadly policy of imperialism and support our Government in finding a better way, (5) to educate for increasingly helpful participation on the part of our country in the organization of the world for the maintenance of permanent peace.

Do you not agree that the National Council for Prevention of War is promoting world peace in a sane and effective manner? Will you not make a small investment at this time and watch your investment?

What Our Backers' Money Did In 1927

NATIONAL COUNCIL FOR PREVENTION OF WAR
532 Seventeenth Street Northwest
Washington, D. C.

OUR REPORT

If you are a stockholder in a corporation you expect your managers to render an accounting at the end of each year. If you are already or are intending to be a stockholder in this great business of putting an end to war, and are looking to the National Council for Prevention of War as one important agency working toward that goal, you have a right to know what we have to show for contributions received in 1927.

We try here in a few words to give a glimpse of what we have been doing. We indicate also what we plan to do in 1928.

One more fact—this organization is a partnership and its growing success is due to the moral and financial backing of loyal and earnest supporters. We hope you will be one of our permanent partners.

How $12,000 Helped to Prevent War With Mexico

On January 13, 1927, leading New York papers warned the American people that if they wanted peace with Mexico, they must "begin to fight for it." The National Council for Prevention of War raised $12,000 and did four things with the money:

1. With 1,000 telegrams, signed by a small committee, 400 signatures of outstanding citizens from practically all the States were obtained to a declaration urging arbitration; and this was sent to the 13,600 newspapers in the country. Leading New York papers carried it in full with the 3 columns of signatures.

2. Simultaneously a technical proof that the issue was arbitrable was prepared by a professor of international law in Columbia University and sent by air mail and special delivery to 240 specialists in this field. Within 48 hours, 101 had wired their approval and the statement with these signatures was released to the press and carried by leading papers on the front page.

3. Meanwhile the peace groups had been invited to confer on the situation. Thirty organizations met in Washington on 3 days' notice and adopted plans for a joint campaign of letters and telegrams to Senators and the President.

4. Finally, 75,000 ministers received informatory letters with requests for action.

The religious press was united in its insistence on arbitration. The cooperation among peace groups was magnificent. The people wanted no war with Mexico. The response from the country was tremendous. The Senate voted 79 to 0 in favor of arbitration.

Deflating the "Big Navy" Program

Similar cooperation recently among the peace forces of the country has cut a "big navy" program of 71 ships to 16 ships with the likelihood of further reductions. The press, the churches, the women's groups, and emergency committees have united with scattered individuals all over the country in such a protest against this provocative and competitive program as Congress has not seen in recent years.

The National Council for Prevention of War has been given much publicity in this campaign by members of Congress and others. We have distributed 350,000 pieces of literature, including 16 releases to the press, and have spent approximately $10,000.

Towards Understanding of Post War Europe

In order that our high-school and college students may understand the new spirit that controls the relations of France and Germany under the enlightened leadership of men like Briand and Stresemann, contests have been conducted by special committees, one for the best translations of Briand's speech welcoming Germany into the League of Nations in September, 1926, the other for the best essays on the significance of Germany's entrance into the League of Nations. In the former contest more than 1,500 colleges and high schools sent to the Committee for 56,000 copies of the French text and 2,600 translations were submitted by students in competition for the prizes.

A member of our staff is now giving a considerable part of his time to helping the Committee in Charge of the National Oratorical Contest on Outlaw Treaties organize competitions among high-school students in every State of the country.

CIRCULAR OF THE NATIONAL COUNCIL FOR PREVENTION OF WAR—ONE OF THE NUMEROUS ORGANIZATIONS AFFILIATED WITH THE FEDERAL COUNCIL OF CHURCHES OF CHRIST IN AMERICA

of its president, in whom the real power thus lies to speak and act for the vast organization. According to *Who's Who in America*, this powerful person is an Englishman by birth and education, who came to this country when about thirty-one years old; and another member of the small control group emigrated from England in 1891 at the age of eighteen.

This is the organization which led the successful movement through nation-wide propaganda to defeat the Coolidge program for large new construction of cruisers and other naval auxiliaries, following the breakdown of the 1927 Geneva Naval Conference. That such propaganda was the principal influence in the defeat of that program is the boast of the "Federal Council of Churches of Christ in America," and the considered opinion of nearly all members of Congress. President Coolidge himself has emphatically expressed the same opinion.

From what has been set forth it is clearly indicated that large sums of money are being spent by many powerful organizations in which foreigners play a prominent rôle, to propagandize the country through the press, the church, the stage, the movie, the schools and colleges, the lecture platforms, and virtually every agency of communication. The declared object is the promotion of international good will and of world peace, by controlling the United States government through the control of American public opinion.

Few people who have given this subject much study will question the great susceptibility of the public to propaganda, because most people believe what they see, read, and hear, and support what they believe to be true, without much analytical effort. In the following section we will examine some specific instances of the potency of foreign propaganda, with a view to estimating whether the arguments which have been advanced in its behalf are justified by its accomplishments.

IV.

In a recent conversation with an ardent pacifist the writer called attention to the extensive foreign propaganda now so prevalent in this country, and dwelt upon the consequent jeopardy to the United States in matters involving a conflict of legitimate international interests—such as foreign trade, merchant marine, and navy. The pacifist's reply was to the effect that "the cause of world peace is sufficient justification for the foreign propaganda and that the proverbial good sense of the American public affords ample protection against our being imposed upon." The pacifist was ready to retract this opinion when reminded of the tremendous foreign propaganda effort from 1914 to 1917, which was largely responsible for our entry into the World War.

That the same influences have been at work on a great scale to get us into the League of Nations and the World Court, and to have us cancel debts incurred since the war, but misrepresented as war debts, is too obvious to require elaboration. The fact that the propaganda failed in its ends regarding the League and the Court does not alter the principle involved in its use. As to the debts no one could say how great a sum Europe has been, and will be, saved from paying through manufactured American opinion. We have also the example of a steady and long-standing foreign propaganda against our merchant marine, which reached such lengths during President Harding's efforts to obtain a subsidy that he was constrained to make a vigorous public protest against it.

The most striking example of foreign propaganda conducted in foreign interests at the expense of America is given by the Washington Conference of 1921-22 on Limitation of Naval Armaments. Of all the delegates to the conference the British alone had provided a large publicity staff. Perhaps on this account the American presiding officer turned over to the British the control of all publicity connected with the conference. According to Mr. Wickham Steed, editor of the London *Times*:

> The American delegates refused to give out any news during the Conference. They left this whole matter with the British publicity agent, Lord Riddell, and I am not giving away any state secrets when I say that when Lord Riddell left Washington there was general lamentation among the American and other correspondents, who wondered where they would proceed to get the real news. That may have been quixotic on the part of the Americans, but rather than be under any suspicion of using their press to turn public opinion against nations with whom they may have had differences, they did this and the American delegates were absolutely and honorably silent.

These facts were not generally known at

the time nor have they been since. The British publicity staff, especially attached to their delegation, were thus in complete control of the color of the news which emanated from the conference, and in addition had a tremendous asset in the enthusiastic support of the large semi-British propaganda organizations referred to in a previous section as at work in the United States.

We should not forget the further fact that the issues under negotiation involved an inherent conflict of national interests, since they affected future relative naval strength together with the trade-protecting power which such strength assures. Thus it is apparent that the whole setting served as a rather crucial test of the theories which have been advanced in justification of conducting propaganda in foreign countries, nominally for the promotion of international good will and concord.

If one's recollection be cloudy, the following conclusions as to the Washington Conference propaganda may be readily substantiated by reference to the press of that time. The American public was very successfully led firmly to believe:

1. That the sacrifices entailed in our battleship scrapping program were paralleled by the battleship scrapping of other powers.

2. That the failure to limit auxiliary tonnage, whereby Great Britain retained her huge cruiser preponderance, did not involve any unfairness to this country and bore no essential relation to battleship scrapping.

3. That the failure to limit auxiliaries did not materially affect the value of the treaty in preventing future competitive building and excessive expenditures.

4. That the effort of France to retain sufficient submarine force to safeguard her sea communications against overwhelming British naval dominance was reprehensible in the extreme, and made it impossible to limit cruisers and other auxiliaries.

The American public was strongly indoctrinated with these and other similarly fallacious beliefs, all favorable to the British, whereas not a single point even slightly unfavorable to their case received any attention. American sentiment as a whole was swung to an enthusiastic support of the whole proceedings and conclusions of the conference, without the slightest inference that America was the only participant that had made any substantial sacrifice.

This has been characteristic of the foreign propaganda on naval questions during the six years which have intervened since the conference. Not only have the original misrepresentations as to the conference itself been strongly sustained, but American naval and national interests in general have been consistently opposed. The most striking example of this, and the only one which need be dwelt upon here, relates to naval construction since the conference.

Within five years after the conference the following numbers of ocean-going combat ships had been laid down or appropriated for by the respective signatory powers:

United States	13
Great Britain	54
Japan	117
France	99
Italy	57

The effort of the United States to keep within the spirit of the treaty by refraining from entering a new competition is obvious. Equally clear is the fact that by thus playing fair we were rapidly becoming an inferior naval power. In these circumstances President Coolidge called the Geneva Conference of 1927, where an earnest but vain attempt was made by the American delegation to extend the principles of limitation to naval auxiliaries on a moderate and equitable basis.

The failure at Geneva left us little choice but to proceed with naval construction on a scale commensurate with our ocean trade and with what had been going on abroad for several years. A building program entirely in harmony with the 5-5-3 ratio was therefore presented to Congress with the warm endorsement of the President. Unquestionably a great majority of Congress was also strongly in favor of the measure until the forces of propaganda were let loose on a scale never before experienced on Capitol Hill. Every member of Congress was literally submerged with written and telegraphic protests over a period of several months. Before the bill could get out of the committee it was emasculated by a reduction from seventy-one to sixteen ships. Even this did not appease the Federal Council of Churches, which continued to lead the propaganda and finally succeeded in defeating even this small increase in the American Navy.

As has been stated before, in the minds

of a great majority of Congress, and of the President, there is no question but that this propaganda was primarily responsible for the defeat of the naval program of 1927. Here is a striking example of the power of propaganda and of the power of foreign influence in this country. Against a proposal very clearly and most justly in American interests, a public opinion has been created by an organization working under the almost exclusive control of an Englishman, sufficient to defeat the intentions and efforts of the Congress and the President.

This case is all the more extraordinary from the fact that when a similar British program was proposed in 1924—the program which now is mainly responsible for the necessity we are under of building cruisers—there was virtually no opposition to it in the press of either this country or Great Britain. On the contrary there was much propaganda in its favor in both countries—this notwithstanding the fact that Britain was then superlatively strong in cruisers. The question naturally arises, why did not the British head of the National Council of Churches of Christ in America, in the interest of world peace, work as strenuously against the British cruiser program of 1924, and the French, Japanese, and Italian programs of about the same period, as he did against the American program of 1927?

The foreign propagandists are rapidly building up an inferiority complex among us. We are the horrible example of the country which habitually "does those things which it ought not to do" and has "left undone those things which it ought to do." We are the only country whose trade needs no protection except such as will be given us by other navies; the only country which should not trust itself with armaments and whose armaments are mistrusted by others; and, therefore, the only country whose armaments require crippling in order to promote world peace.

I think it can be fairly said that foreign propaganda is inherently detrimental to the country in which it is conducted, because of the virtual impossibility of the average propagandist being able to remain neutral-minded in matters which involve the interests of his own country. Moreover, in the long run, such propaganda seems certain to be very harmful, rather than helpful, to the cause of international good will and world peace, especially when its source is generally unknown to the people of the country concerned, as is the case in America today. When the realization of what is transpiring comes to the people of the country, as ultimately it must come, a strong revulsion of their feeling would seem to be inevitable. From every point of view, therefore, foreign propaganda appears to be questionable if not pernicious.

V.

We have examined the innate need of naval power, not merely for security, but also as a cardinal agency of national prosperity—as a foundation stone of that national wealth without which culture cannot flower. We have concluded that some indoctrinating process is necessary, especially in a democracy, if great masses of landsmen are to comprehend the fundamental relationships between maritime affairs and their own well-being, and are to act according to their own legitimate interests. We have surveyed the omnipotent propaganda, largely foreign guided, now bending American public opinion with subtle fallacy against worthy American interests, and actually controlling Capitol Hill.

Truly the time has come for American education and indoctrination in maritime matters, both for constructive and for protective purposes. The time has come for a national awakening in the major play of national economic forces which inevitably link up production, sea transportation, foreign markets, and sources of materials with naval power. The time has come for a new Declaration of Independence and a new freedom—an independence and a freedom of *opinion*. Only thus may we retrieve for ourselves the ability to make decisions based on reality and truth, as to how we shall promote the peace of the world while at the same time preserving justice and equality of opportunity for America.

The intellectuals of the country must as ever furnish the principal leadership in such an awakening. It is, therefore, all the more unfortunate that in the situation confronting us, we find such a great proportion of the intellectuals themselves taken in by the arts and deceptions of intellectual foreign propagandists. The writer recently attended a lecture given by an eminent British naval historian at an American university. While

the lecturer was a civilian his written works amply testify to an excellent understanding of naval technology. Yet in sustaining the theme before an American college audience that navies are unnecessary and obsolete, his remarks were filled with fundamentally erroneous technical assumptions, which very evidently were not apparent to the students and professors present. He spread the same fallacies through many American schools and colleges during a lecture tour of several months.

This is but one example of the need of technical assistance being given to American intellectuals if they are to do their part in creating a correctly and rationally informed American opinion. Further proof of this may be had by reading, almost at random, any article by a college professor upon a naval topic. They were easy to find in our newspapers and magazines during the Washington and Geneva naval conferences.

There are many reasons, in the present instance, why the government's technical agencies should share in the national maritime indoctrination so urgently called for. The government is inherently responsible that its citizens are duly informed upon matters which affect broader interests, and which in the final analysis they must decide. Manifestly this governmental responsibility becomes very much greater when the citizens are being subjected to indoctrination from foreign sources along lines which tend to infringe their own, to the advantage of foreign interests. Our people have a right to be protected against such false and injurious propaganda at this time, and it is the clear duty of the government to give them that protection.

Within the last few years we have seen splendid examples of a recognition of this duty, and a meeting of this responsibility, on the part of the Shipping Board and of the Department of Commerce. Faced with foreign propaganda detrimental to American interests these two branches of our government have courageously gone before the country in open campaigns of truthful education and indoctrination and furthermore have been successful in making their issues clear to the people, and consequently in winning their cases. Why should the Navy fear to follow?

It is true that there are some severe limitations upon the ability of the Navy Department to give the country that leadership in maritime thought which is called for; notably the absence of appropriations for such a purpose. On the other hand there are very powerful patriotic organizations, such as the D.A.R. and the American Legion, which unquestionably would be glad to serve the country in this way if their coöperation were sought on the basis of the Navy furnishing technical advice. Similarly there are many business agencies of great influence, such as the numerous chambers of commerce, which, on being indoctrinated with the close relation between business and maritime affairs, could be counted upon to support the merchant marine and the Navy.

Whatever may be the limitations of the Navy Department in this matter of publicity, there are many opportunities for officers as individuals, too frequently avoided, for direct contact with the people through the press and platform. The country has some reason to expect that its own technicians, educated and trained out of public funds, shall inform and advise it on technical questions, and furnish it with some defense against propagandists preaching the viewpoint of foreign naval technicians.

At this point it seems pertinent to discuss some aspects of a sound national naval indoctrination, by whatever agencies it may be undertaken.

The fundamentally sound doctrine of a navy for "trade defense" should be the keynote. The function of defense against invasion, or other forms of territorial aggression, is secondary to that of trade protection in the broad sense—the safeguarding of the national sea communications during peace or war. We will do well to follow the British lead in this, both because of the facts in the case and because it has a better public appeal. Material welfare is a matter of such deep and continuous public interest that anything which can be shown to promote it meets with ready support.

The appeal for war preparations, on the other hand, is saddled with an instinctive dread and abhorrence of war. It presupposes the approach of war, and the advocates of a strong navy who rest their case principally upon military-naval grounds are constantly in the position of predicting war and raising "war alarums." This is unpalatable to the average person, unsettling to general business, and provocative to foreign

peoples and governments. Moreover, it builds up the suspicion, however unjust, that the proponents of preparedness actually desire war—a favorite pacifist charge easily propagated. The foreign propagandists have consistently drawn the "red herring" of war across the trail of every legitimate argument for a strong American Navy.

The contention that strong armaments serve to prevent war, and hence to promote peace, has undeniable merit when governments so armed are bent principally upon the general economic welfare of their people. As previously noted Britain has given us an outstanding example of the use of a strong navy in promoting wealth with peace, over a period of a century. Shall we deny equally worthy motives in America's heart, and equal ability to make them effective? As with Britain, so with ourselves, who are rapidly supplanting her as the world's leading trader, a strong navy is needed for trade protection, not only when we may possibly be at war, but also more probably and more often when we are a peaceful neutral.

The history of nearly every war proves that the commerce of the weak neutrals almost invariably suffers badly. In the late war much neutral shipping was seized by the Allies and employed for their own uses, while it was destroyed wholesale by the Central Powers. Let us not forget that the decision of the German High Command to adopt ruthless submarining—the decision which forced hostilities upon us—was predicated upon the supposed weakness of this country in combating submarines. The weak neutral invites such depredation again her interests as constantly to persuade her to fight. If she wishes to avoid war it is better for her to arm herself.

Such reasons as these are the true justification of the demand for naval parity with Great Britain, without any implication of a war with that country, as has been so assiduously charged by foreign propagandists. It is easily demonstrable that the most certain guaranty of peace between these two principal trade competitors is an equality of their respective naval forces, since under that condition there will be a minimum tendency for one to impose upon the other. As Mr. Hoover has pointed out, "In the large view, our exports are not based on the destruction of our competitors but on the insistence that we shall participate with them in the growth of the world demand." Such insistence will come from both countries and is less apt to lead to friction if naval parity exists between them.

He who would successfully indoctrinate the country along sound naval lines must above all make clear that he stands for the promotion of "world peace" and that a rational reduction of armaments on an equitable basis by international agreement, together with various forms of diplomatic commitments respecting war, are the most effective form of promoting peace. "World peace" has been the catchword of the foreign propagandist, by means of which many very earnest persons have been unwittingly converted into a menace to the country. "World peace" has been used to carry on its back numerous fallacious proposals detrimental to American interests and calculated to further foreign interests. We should deny the "little navy" party any monopoly of world-peace doctrine, and should advocate the promotion of world peace along sane and just lines. We should also admit that the ultimate attainment of world peace is probable, since human evolution is limited only by apparently unlimited time. Once this position is taken there will be found few honest persons to quarrel with; not even many pacifists.

It is the writer's view that the overmaligned pacifist is entitled to much respect and consideration. Let us remember that American citizens have a constitutional guaranty of free speech and that there can be no iniquity in firmly holding to an honest opinion. If we are unable to controvert their arguments, logic must force us to the conclusion that perhaps they are right. The issues involved in the national maritime interests are far above personalities. Let us meet the issues or confess our error.

The country needs competent and honest guidance towards a sound maritime indoctrination, in order that it may decide upon national policies affecting its prosperity and security, in harmony with its own legitimate interests. Without such guidance it is at the mercy of subversive foreign propaganda now successfully at work. Active naval participation in public indoctrination is thus not only fully justified but actually demanded by the needs of national defense.

Until the World War came upon us, native American intelligence together with the indoctrination normally carried on in every country by earnest, unselfish, and honest leaders of opinion, was sufficient to safeguard American interests. But within the last few years such leaders have been made impotent—have been submerged—by organizations and money in the hands of radicals, internationalists, and foreigners. For them the churches and a great body of idealists have become as putty, until the very foundations of our internal government, as well as every external American interest, are in growing jeopardy.

There is no country in the world where the government is so much under the control of public opinion as our own. In no other country are the rank and file of the people so ready to play fair with the rest of the world, or so eager to be world-helpful. They are not only receptive to new ideas but responsive to all suggestions for constructive action. These facts, combined with the highly developed means of quickly communicating with them as a whole, make them an easy prey to uncontested ulterior propaganda, which inevitably finds a ready reaction in governmental circles. But let us remember also that the same conditions make for a ready response to sound leadership—a leadership urgently required to transpose the status of American interests from that of a stepchild to a true kinship with world interests—a leadership which will insure due protection with a minimum danger of war to the ocean-going trade so essential to America's well-being.

An Incident *in the* Founding *of the* American Navy

By L. H. BOLANDER

ON THE next page is shown a reproduction of a sheet of foolscap which had a most interesting and important part to play in the birth of our Navy. The endorsement on the reverse side of the sheet reads:

ORIGIN OF THE NAVY

At a caucus in 1794 consisting of Izard, Morris, and Ellsworth, of the Senate, of Ames, Sedgwick, Smith, Dayton, etc. of the Repres. and of Secrets. Hamilton and Knox to form a plan for a national Navy, Smith began the within figuring as Secret'y of the meeting. Hamilton then took the pen, and instead of minuting the proceed'gs, he made all the flourishes here described, during the discussion. In conseq. of the plan adopd at this meetg, a Bill was reported for building 6 frigates, which formed the foundatn or origin of the American Navy.

The "figuring" on the top of the page reads:

First cost of a frigate 44 guns of 1,300 tons and provisions for six months..	150,000
350 men.....	50,000
Provisions for six months.....	11,000
	211,000
Annual cost of such vessel.....	60,000 Drs.

The rest of the page seems to have been the aimless marking of a man preoccupied with important matters. Similar scratches were made on the reverse side of the sheet but to a less extent.

The original of this document is preserved by the Charleston Library Society, but no one seems to know who presented it to the institution or how long it has been there. The writer of the above indorsement is unknown, but he must have been one of the men present at the caucus, as he writes as though he were an eyewitness of its proceedings. It is possible that the writer was Ralph Izard, a senator from South Carolina, and a member of the caucus. He may well have preserved the document, and later in his life have presented it to the Charleston Library Society. The sheet bears no date except 1794, but its approximate date may easily be determined by a brief study of its historic setting.

In the years prior to 1794 Algiers and Portugal had been at war and though Portugal had never taken very active measures against the Algerian coast, she had kept a strong naval force at Gibraltar, and prevented quite effectually any corsair of this state from venturing out in the Atlantic. This state of affairs had proved very useful to the rest of Christendom for it left Atlantic commerce free from their molestation. Quite unexpectedly this war had been brought to a close in 1793, and it was broadly hinted on the floor of the House that Britain played a vital part in bringing about the truce. This peace or truce allowed the rovers to come into the Atlantic, and the consequences to American commerce were soon evident. A squadron consisting of four ships, three xebecs, and a brig immediately passed Gibraltar, and by October 9, 1793, four American vessels with their crews had fallen into their hands.

President Washington on December 16, 1793, laid before the House and Senate jointly a report from the Secretary of State concerning measures that had been pursued for obtaining a recognition of the treaty with Morocco, for the ransom of American prisoners and for the establishment of peace with Algiers. At the same time he sent certain confidential communications on the subject of ransoms and tributes to be paid to the Barbary States.

On December 17, 18, and 19, these communications were read and discussed by the House. On December 24 a second message was received jointly by the House and Senate:

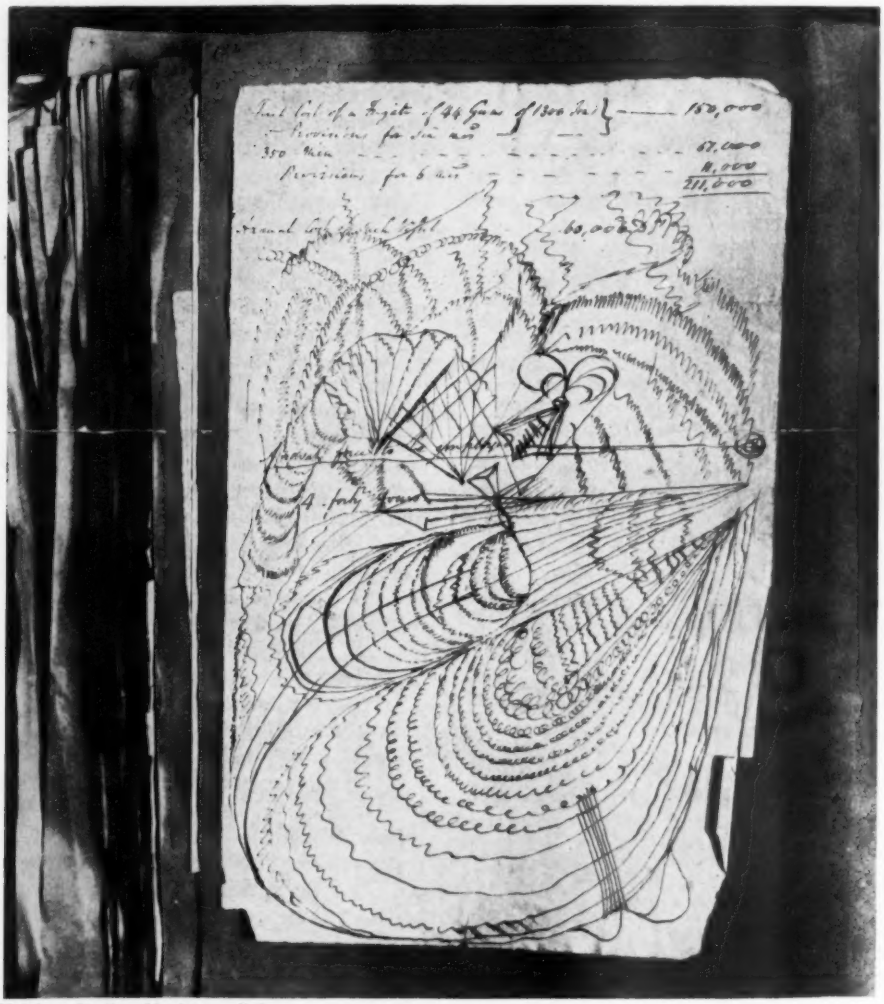
Gentlemen of the Senate and the House of Representatives:

Since the communications which were made you on the affairs of the United States and Spain,

and on the truce between Portugal and Algiers, some other papers have been received, which, making a part of the same subjects, are now communicated for your information.
December 23, 1793.

GEORGE WASHINGTON

These communications were read and discussed at length in the House sitting in Committee of the Whole on the twenty-fourth, and again on the twenty-sixth and twenty-seventh, the thirtieth, and thirty-first, and on January 1, 1794. (Congress was not in session on December 28, 29.) The question as to what action should be taken against Algiers was of vital moment, and occupied nearly the entire time of the House.



Melchers Studio, Charleston, S.C.

THE COST OF A NAVY

Three resolutions were reported on the first which were read before the House the following day. (January 2, 1794.)

The first resolution read:

Resolved, That a sum not exceeding——— dollars be appropriated, in addition to the provision heretofore made, to defray any expense which may be incurred in relation to the intercourse between the United States and foreign nations.

The second resolution read:

Resolved, That a naval force, adequate to the protection of the commerce of the United States against the Algerian corsairs, ought to be provided.

Both these resolutions were agreed to by the House.

The third resolution was far more definite in tone:

> *Resolved*, That a committee be appointed to report to the House the naval force necessary for the purposes aforesaid together with an estimate of the expense.

A motion was made and seconded to amend this resolution by adding the words "and the ways and means of defraying the same."

On the vote the resolution as amended passed by a majority of two, 46 in favor and 44 opposed to the resolution.

The nine men who were appointed to serve on this committee brought in a report on the twentieth. This report stated that the naval force necessary for the protection of the trade of the United States should consist of four ships of forty-four guns each, 18- and 9-pounders, and two ships of twenty guns each. The aggregate sum needed for these vessels was estimated in round numbers at $600,000. The report then went into details as to how this sum was to be raised.

This report was brought up for discussion on February 6, and continued on the seventh, and again on the tenth. James Madison was most active in opposition to any proposal for naval armament. He maintained that before the American squadron could be equipped, the truce between Portugal and Algiers might expire. He would save the money intended for the fleet and hire the Portuguese ships of war with these same funds as soon as their truce ended. He wished that the House sitting in Committee of the Whole would reject this report and when they did so, he would move a resolution "that the sum of ——— dollars be provided to be employed in such a manner as should be found most effectual for obtaining a peace with the Regency of Algiers, and failing in this, that the sum should be applied for obtaining protection from some of the European Powers." Thomas Fitzsimmons, of Pennsylvania, opined that two American frigates with the Portuguese vessels should be sufficient. John Smilie, another congressman from Pennsylvania, thought that Britain would assist Algiers underhandedly against any fleet we might equip. Other members spoke in a similar vein.

On February 21 the House acted on the resolution, "That a naval force, to consist of four ships of forty-four, and two ships of twenty guns each, be provided for the protection of the commerce of the United States." This was resolved in the affirmative by a vote of 43 to 41.

On March 5 a bill for providing naval armament was formally presented. On the same day the President sent a message to both the House and Senate, dated March 3:

> I transmit to you an extract of a letter from Mr. Short relative to our affairs with Spain, and copies of two letters from our Minister in Lisbon, with their enclosures containing intelligence from Algiers; the whole of their communications are made in confidence. . . . .
>
> G. WASHINGTON

The enclosures mentioned included a letter from Colonel David Humphreys, our commissioner to Algiers, to the Secretary of State, dated from Madrid, December 25, 1793, in which he said:

> It appears absurd to trust to the fleets of Portugal, or any other nation, to protect and convoy our trade. If we mean to have a commerce, we must have a naval force to defend it.

A second enclosure was from one Captain Richard O'Brien, then a captive in Algerian hands. This letter was addressed to Colonel Humphreys under date of December 6, 1793. He wrote in part:

> I see no alternative, but for the United States with all possible speed, to fit out ten sail of forty-gun frigates, six brigs of war of eighteen guns each, and four schooners of sixteen guns each. These to be the fastest sailing vessels ever built in America.

There was also enclosed a petition signed by thirteen American captives in Algerian hands, all masters of American merchant vessels. In the petition they described the hardships and privations that they endured and begged for deliverance by their government. And finally there was enclosed a list of American vessels captured by the corsairs of Algiers. This list showed that there were 13 American ships and 119 American seamen in Algerian hands on December 29, 1793.

This message of the President's with the documents accompanying it stimulated Congress to action, for on March 7 the House went into Committee of the Whole to consider this bill to provide naval armament. It was moved to strike out the clause to provide two ships of twenty guns, and to substitute two ships of thirty-six guns. A long and somewhat acrimonious debate followed

on the bill on March 10, but it finally passed the House by a majority of eleven, 50 in favor of, and 39 opposed to it.

On the same day the bill went to the Senate where it was read the first time. On the thirteenth it was read a second time, and on the seventeenth it was read again and referred to a committee consisting of Senators Langdon, Morris, Butler, Taylor, and Cabot. This committee reported amendments on the eighteenth which were adopted in part. The next day the bill was read before the Senate again and passed. The House agreed to the amendments the same day. The bill finally became a law by the approval of the President, March 27, 1794.

This bill, of so much consequence to the future history of the nation, was not passed without strong, determined opposition, as the close margin of votes readily shows, and won a majority in its favor only by the insertion of a clause that should peace be established with Algiers, all further proceedings under the act should cease.

Senator Maclay, commenting on an earlier attempt to provide naval armament for the nation, said:

> It is the design of the Court party to have a fleet and an army. This is but the entering wedge of a new monarchy in America, after all the bloodshed and suffering of a seven years' war to establish a republic. The Indian War is forced forward to justify our having a standing army, and eleven unfortunate men now in slavery in Algiers is the pretext for fitting out a fleet. [And again he wrote:] This thing of a fleet has been working among our members all the session. I have heard it break out often. It is another menace to our republican institutions.

When the three resolutions were passed on January 2, 1794, no definite plans for naval armament seem to have crystallized, but in the eighteen days succeeding the committee of nine formulated very definite plans for the building of a navy, which they embodied in their report of January 20. The caucus referred to in the document shown here would hardly have met *after* the committee of nine had made such a definite report, so it would seem that the caucus of which we have this record must have met at some time between the second and the twentieth of January, 1794.

It is interesting to note that Ames and Dayton, both present at the caucus, each voted *against* the third resolution of January 2, but *in favor of* the resolution of February 21, and *in favor of* the bill presented on March 10. With only a majority of two in support of each resolution, the bill needed every supporter to be obtained, and it is possible that the astute Hamilton invited these two men to the caucus in an endeavor to win them over in support of the bill.

This interesting sheet of foolscap helps to clear up a debated point in our early history. The biographer of Henry Knox, Secretary of War under Washington, states that Jefferson and Knox were the only supporters in the Cabinet of this bill for the establishment of a navy, and that Hamilton was opposed to it; that the bill was only passed by the sanguine confidence of Knox in its success, and by his strenuous efforts for its accomplishment. Many years afterward John Adams wrote to Jefferson (October 15, 1822) that as he remembered, Washington and Hamilton were both averse to the measure. Jefferson answered him soon after (November 1, 1822) stating that as he remembered, the President approved of the measure, but that he did not precisely remember Hamilton's views on the subject. But if Hamilton attended a caucus with Knox, its strong supporter and advocate, for the purpose of furthering the interests of the measure—for such must have been the aim of this meeting—then Hamilton must have been at least mildly in favor of it: though he well may have had misgivings as to how he, as Secretary of the Treasury, would raise funds to pay the expense of building and maintaining a fleet.

Knox must have been sanguine of the success of the measure for on February 3, 1794, he invited Joshua Humphreys, the marine architect, to come to the War Office to consult with him.

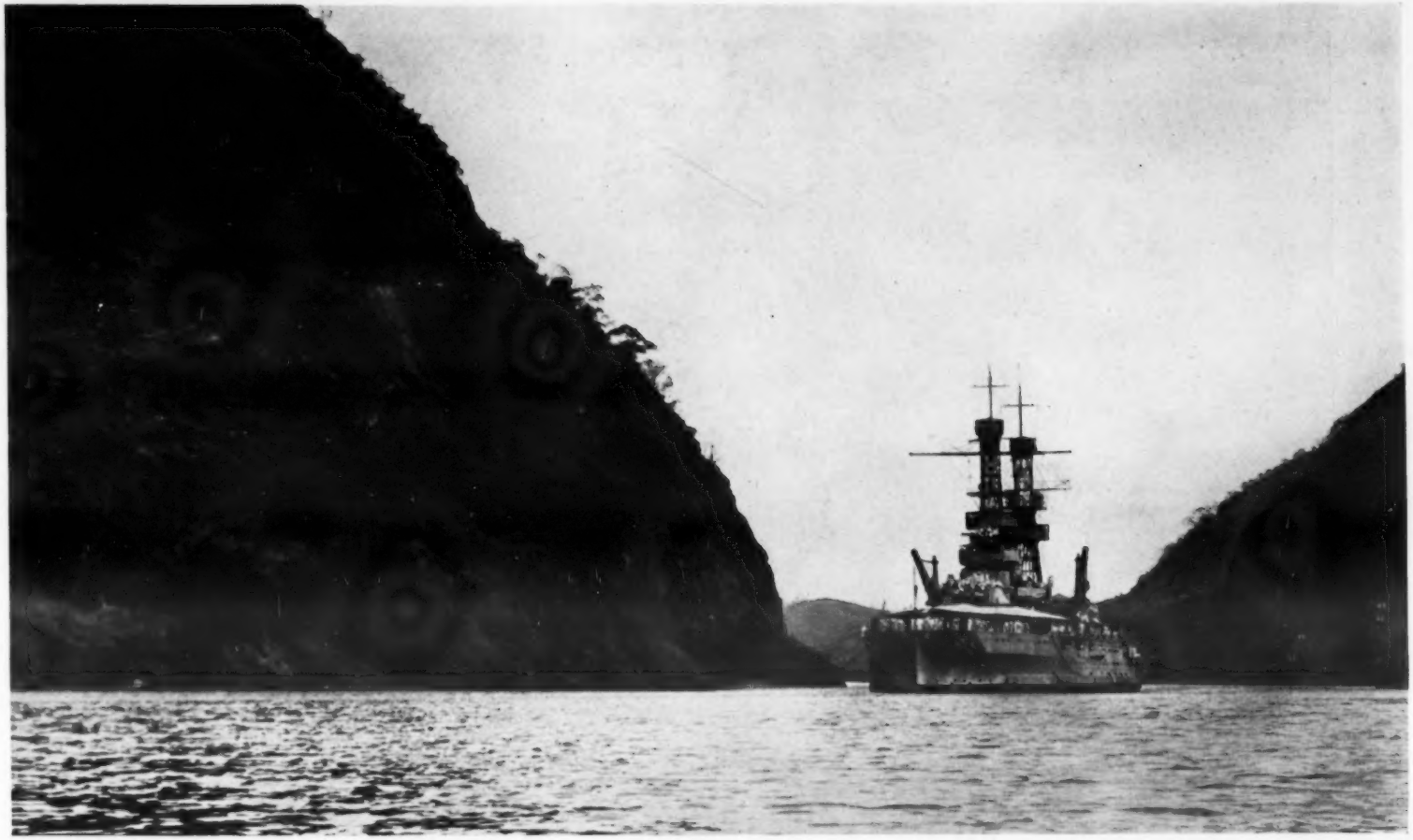
Mr. Humphreys accepted the invitation and related the subjects that were discussed by the War Secretary and himself at this meeting:

> I attended; the subject under consideration was the construction of a navy, whereat I set forth the principles on which I recommended frigates should be built, as expressed in a letter which I had addressed to Hon. Robert Morris.

Mr. Humphreys refers here to a letter which he had written to Morris on January 6, 1793, stating the principles which should govern the construction of a class of vessels not hitherto in existence.

Pickering Studio, Annapolis

A VIEW OF BANCROFT HALL, U. S. NAVAL ACADEMY
Showing a part of the building facing Chesapeake Bay.



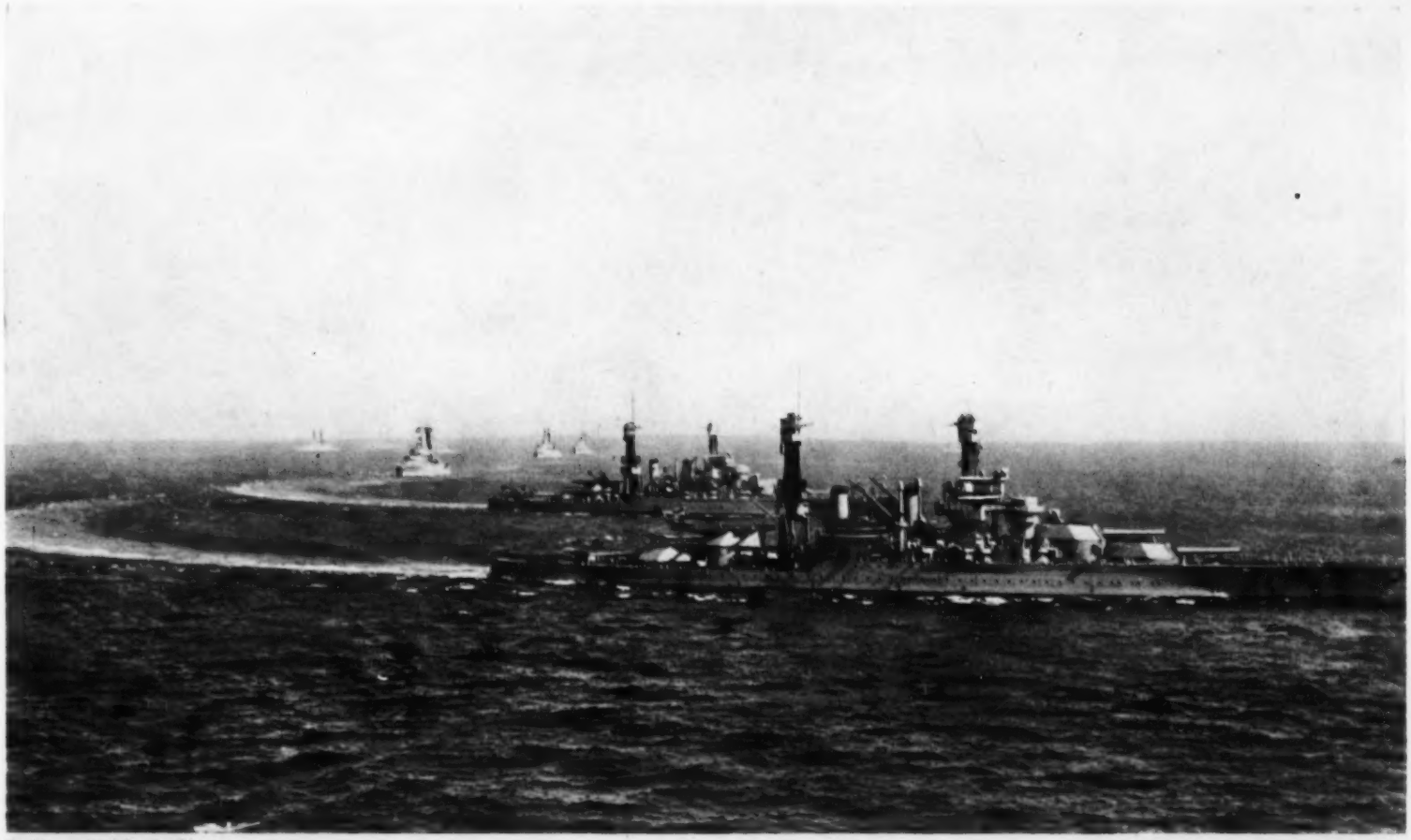
Herbert Photos, Inc.

A STRIKING SNAP

Showing the United States superdreadnought *Pennsylvania* in transit through the Panama Canal, passing through the famous Gaillard Cut. The highest point of the cut, Gold Hill, is shown.

A STRIKING SNAP

Showing the United States superdreadnought *Pennsylvania* in transit through the Panama Canal, passing through the famous Gaillard Cut. The highest point of the cut, Gold Hill, is shown.



Pacific and Atlantic Photos

MANEUVERS

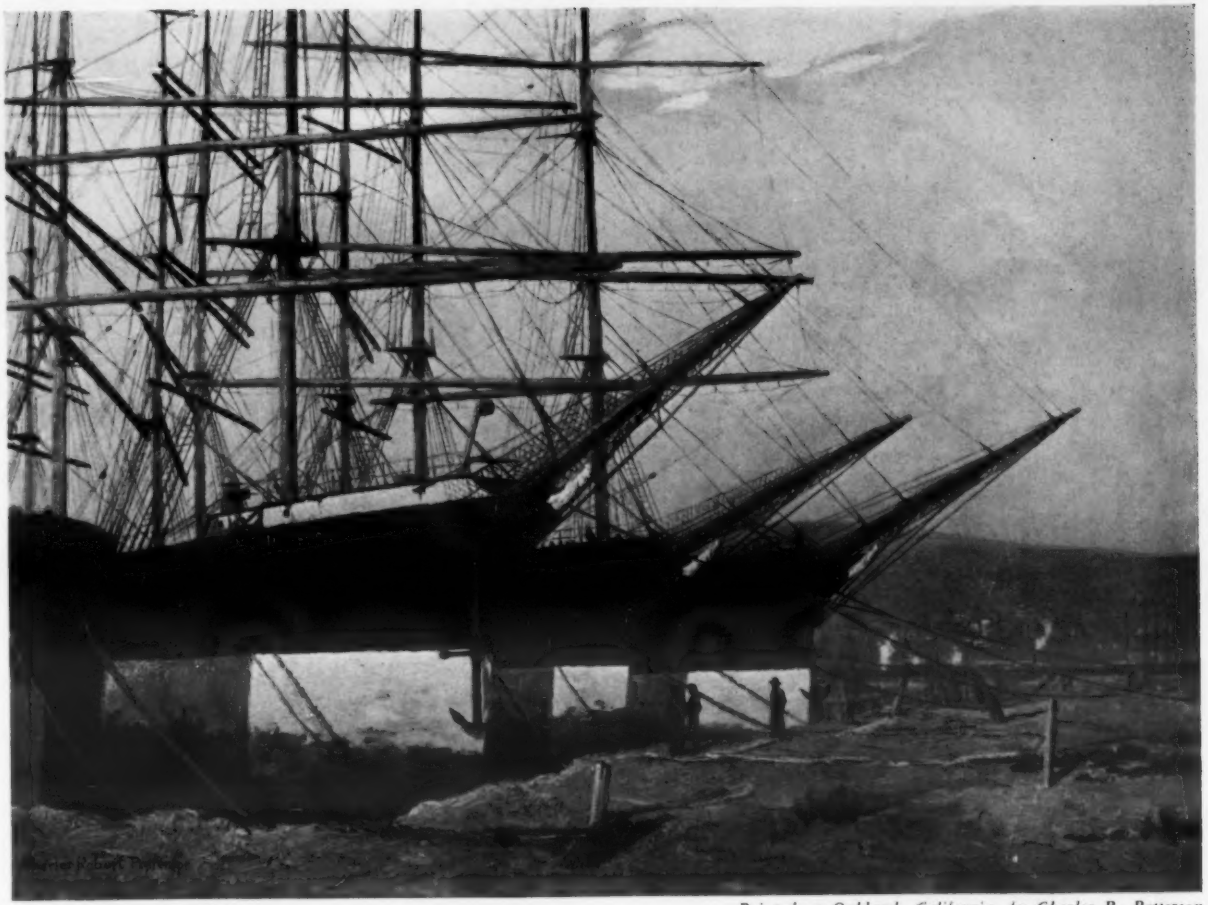
Ships of the line during the recent winter concentration at Panama.

From a painting by Charles R. Patterson

"AN OLD TIMER FROM MAINE"

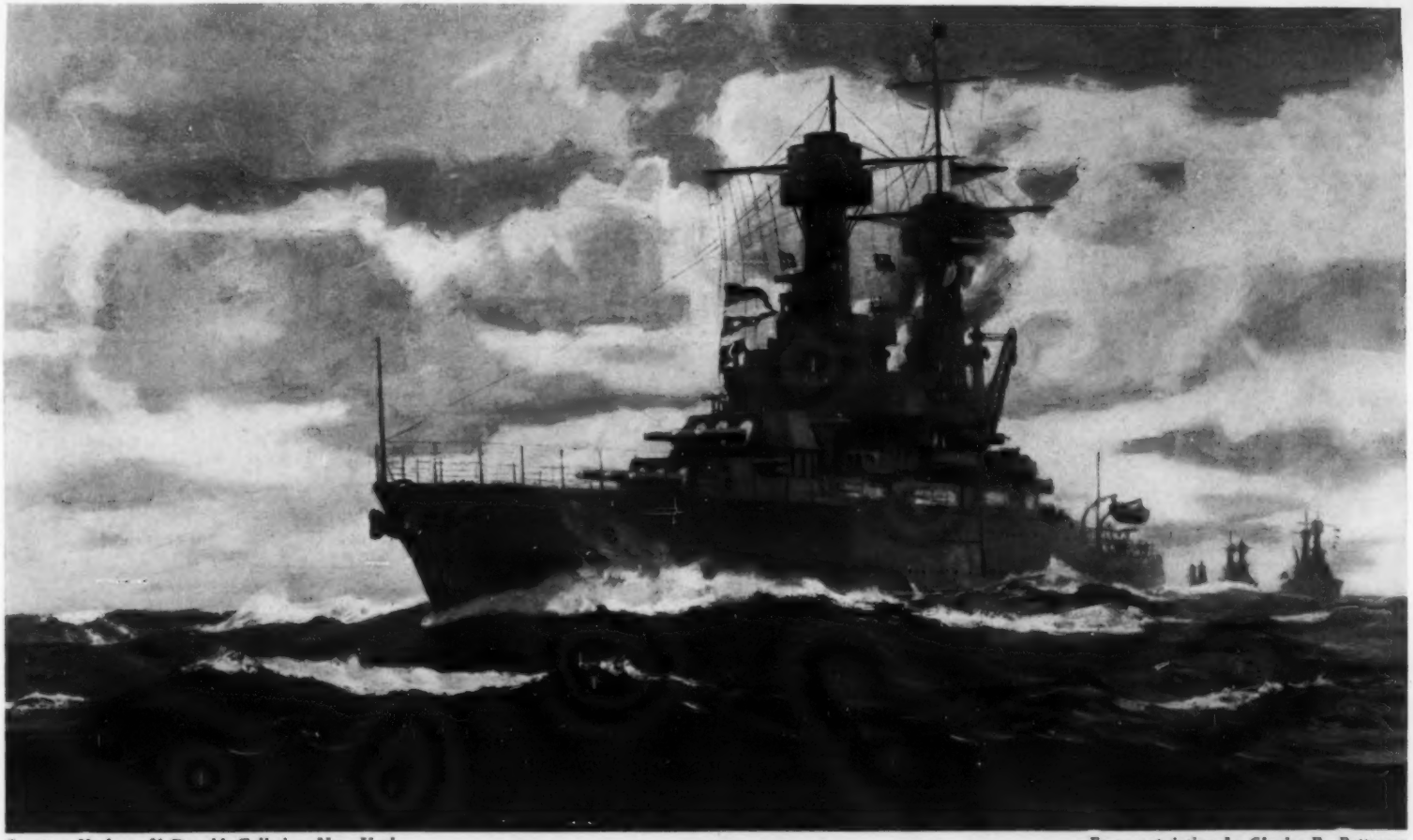
From a painting by Charles R. Patterson

SHIP *HENRY B. HYDE*



Courtesy Captain Franz Jarka *Painted at Oakland, California, by Charles R. Patterson*

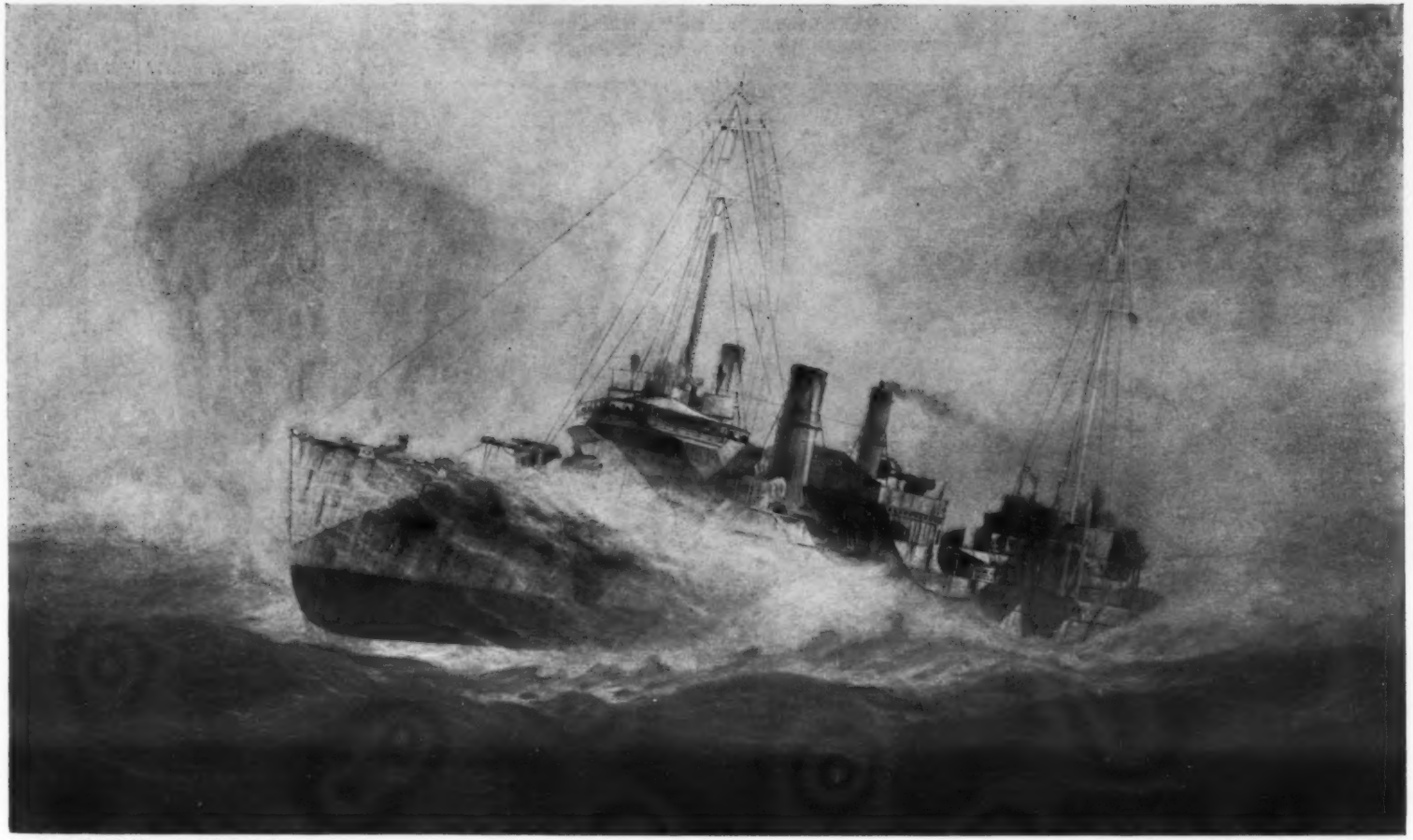
THE LAST OF THE ROBERT DOLLAR SAILING FLEET LAID UP IN OAKLAND ESTUARY



Courtesy Harlow, McDonald Galleries, New York *From a painting by Charles R. Patterson*

"SHIPS OF THE FIRST LINE"

U.S.S. *California* leading a column of battleships.



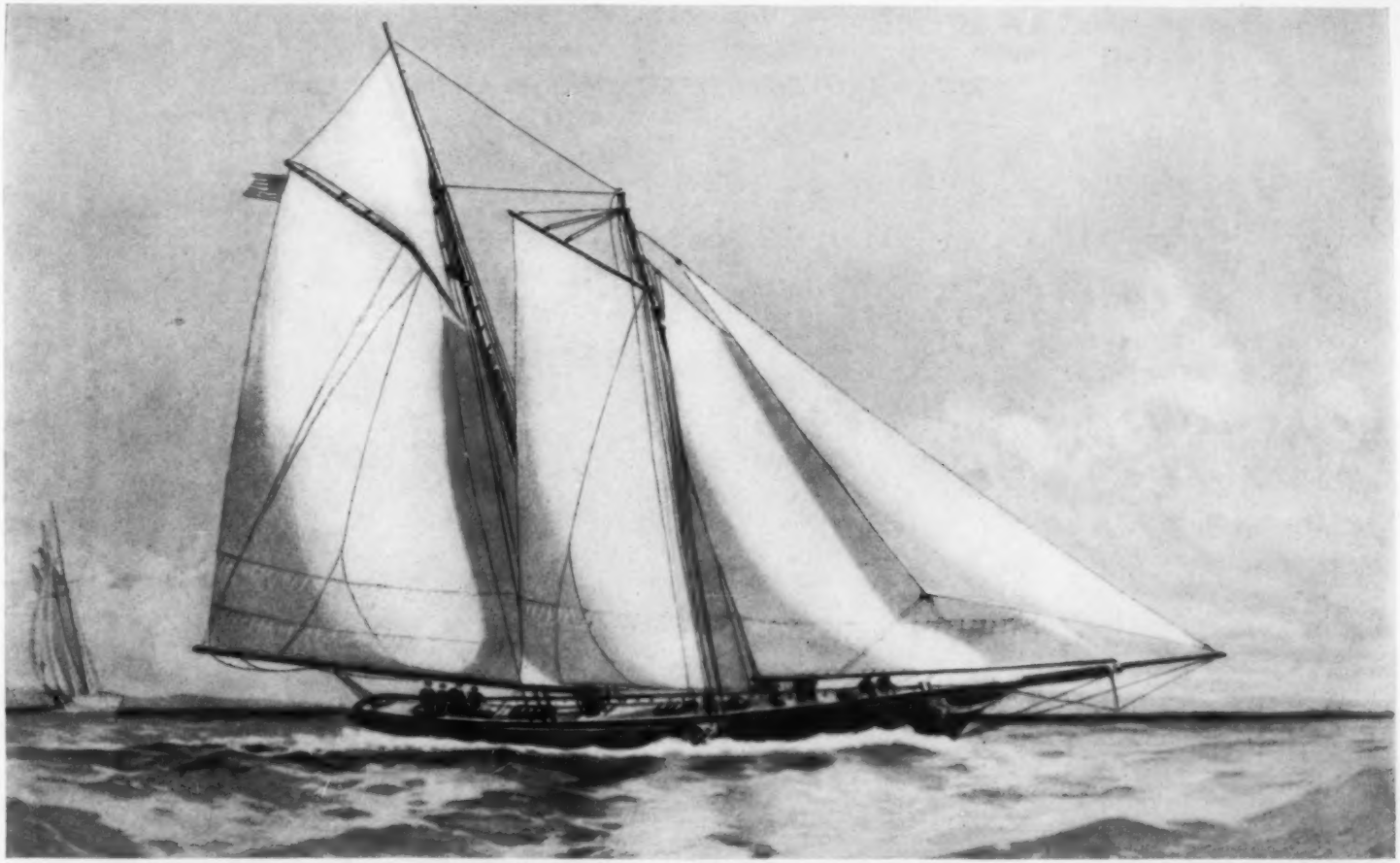
Courtesy Naval Historical Foundation *From a painting by Burnell Poole*

A CRITICAL SITUATION

This painting, which depicts a near collision between the United States destroyer *Stockton* and a troop transport, was presented by the DuPont Company to the Naval Historical Foundation. It is loaned by the Foundation to the Naval Academy and hangs in the library in Mahan Hall.

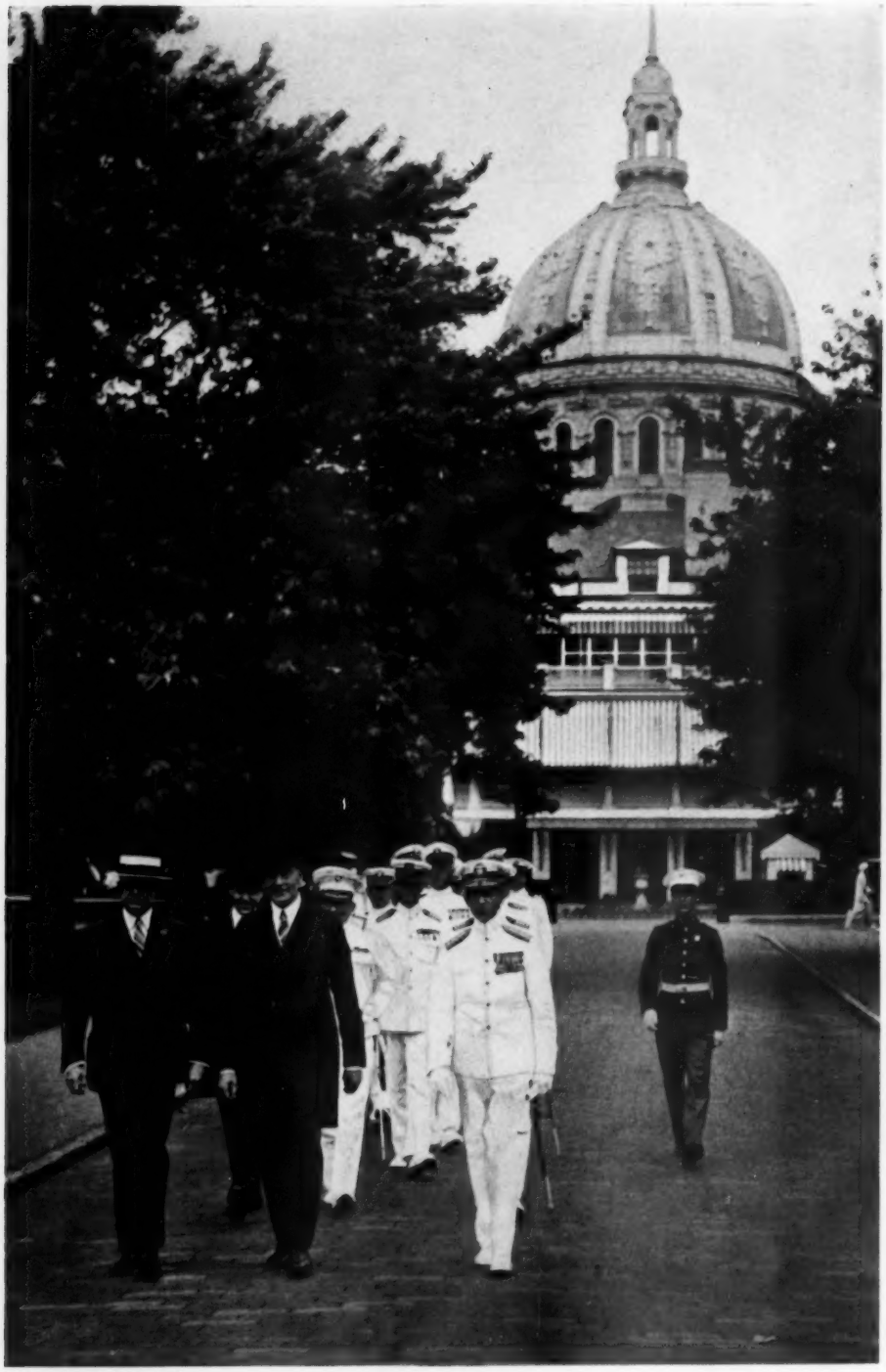
A CRITICAL SITUATION

This painting, which depicts a near collision between the United States destroyer *Stockton* and a troop transport, was presented by the DuPont Company to the Naval Historical Foundation. It is loaned by the Foundation to the Naval Academy and hangs in the library in Mahan Hall.



THE YACHT *AMERICA* AT THE TIME OF HER GREAT RACE, AUGUST 22, 1851

She was a Confederate blockade runner, 1861; a Federal gunboat, 1862-63; school ship, U. S. Naval Academy, 1863-73. In 1921 she was restored to the Naval Academy by the generosity of public spirited citizens. The present Secretary of the Navy, Charles Francis Adams, an ardent yachtsman, sailed the *America* to Annapolis on this occasion



International Newsreel

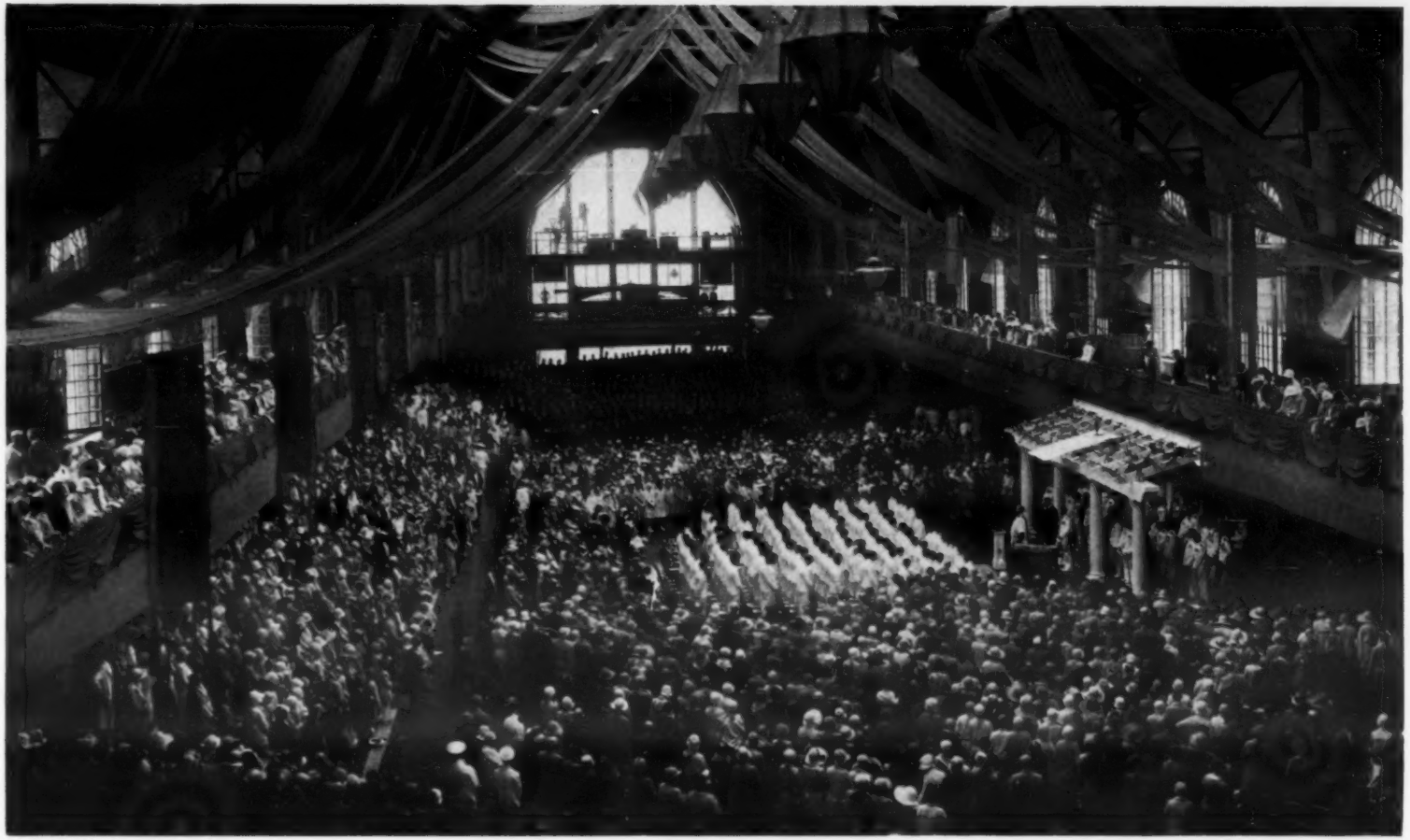
GRADUATION, 1928

The then Secretary of the Navy, Curtis D. Wilbur, the Assistant Secretaries, Governor Ritchie of Maryland, the Superintendent of the Naval Academy, Rear Admiral L. M. Nulton, and the Academic Board, proceeding to Dahlgren Hall, where diplomas were delivered to the graduating class.

Courtesy Brigadier General George Richards, U. S. Marine Corps

THE CLASS OF 1888

This picture has peculiar interest in that it includes Mr. Wilbur, who preceded Mr. Adams as Secretary of the Navy; Admiral C. F. Hughes, Chief of Naval Operations; Rear Admiral S. S. Robison, Superintendent, U. S. Naval Academy; Major General John A. Lejeune, recently Commandant, U. S. Marine Corps; and Rear Admiral A. H. Robertson.



Pickering Studio, Annapolis

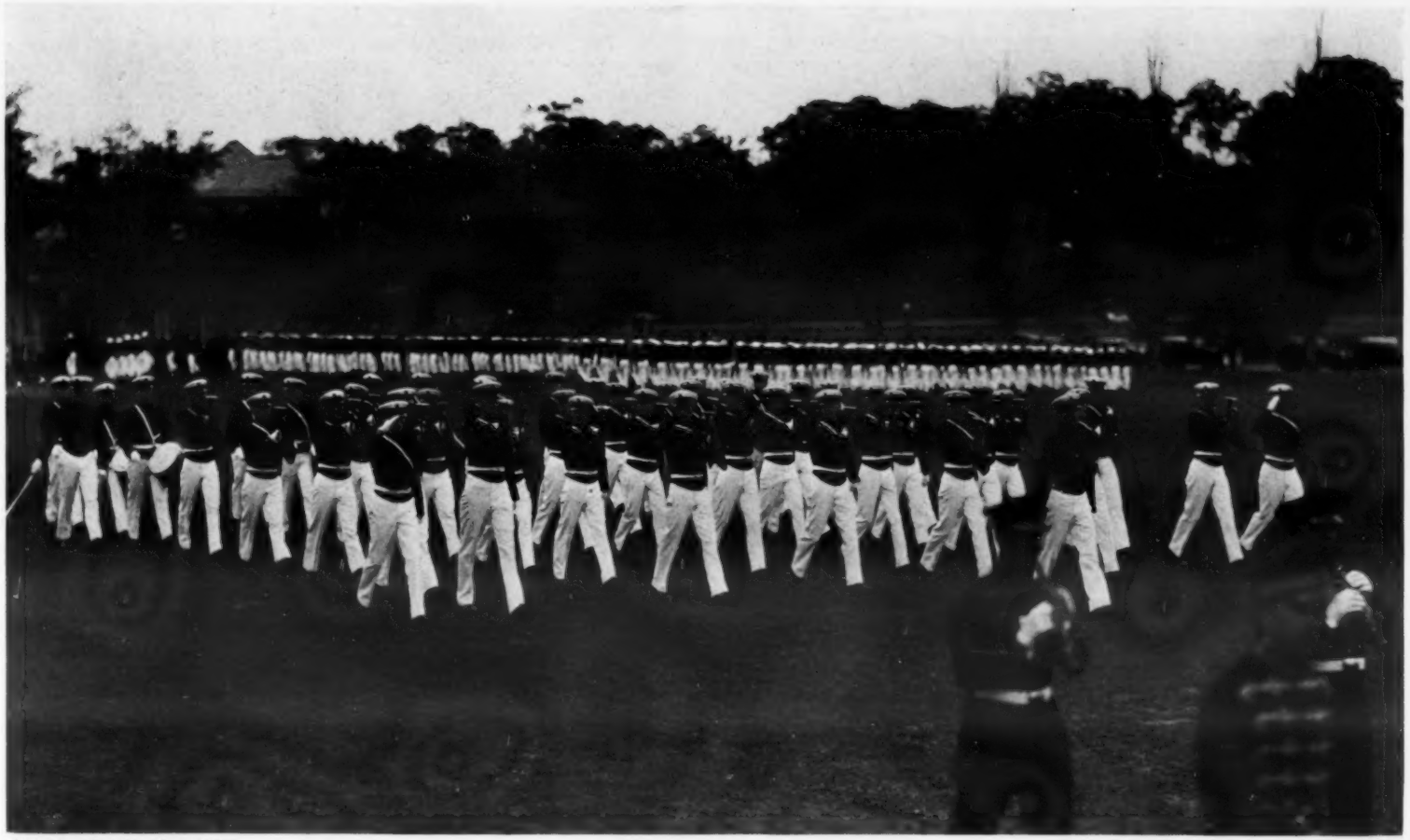
GRADUATION EXERCISES, DAHLGREN HALL, 1928
Exercises being opened with prayer by the Chaplain of the Naval Academy.

Pickering Studio, Annapolis

GRADUATION EXERCISES, DAHLGREN HALL, 1928
Exercises being opened with prayer by the Chaplain of the Naval Academy.

Pickering Studio, Annapolis

"JUNE WEEK"
Midshipmen marching to parade grounds.



Pickering Studio, Annapolis

BUGLE AND DRUM CORPS
Sometimes known as "hell-cats."

Pickering Studio, Annapolis

BUGLE AND DRUM CORPS
Sometimes known as "hell-cats."

Pickering Studio, Annapolis

THE CREW
View of the Severn with the bridge in the background.

Courtesy Midshipman G. M. Holley

THE CHAPEL

THE CHAPEL

Courtesy Midshipman G. M. Holley

The Changing Naval Academy: A Retrospect *of* Twenty-five Years

By Professor Carroll Storrs Alden, *Head of Department of English, U. S. Naval Academy*

MANY graduates are troubled as they hear that the old Academy has undergone some modifications. In this they are not unlike their college brothers. It is hard for those long absent to believe that changes will not result in a loss of character and individuality. Yet compare the Navy of today with that of twenty-five years ago. How few of the ships of 1904, even with changed names, still remain in commission. And who would think it wisdom to hold to the same ships, the same equipment, and the same personnel—so far as this is possible? Even the colleges that are preparing the youth, not for any particular profession, but for life, by giving them a strong foundation of culture, have vastly changed. Greek has gone by the board, and there is much greater attention to the social sciences and to modern history. How could the Naval Academy, in the light of recent developments in the Navy, which is preparing midshipmen for duty on ships in which electricity now plays such a part, preparing midshipmen for assignments either related or entirely devoted to aviation, do aught else than change to meet the need? How, furthermore, could the Naval Academy, if since the World War it has caught a somewhat broader vision of the mission of the Navy, remain unconcerned as if it had no responsibility?

It happens that on June 30 I shall have completed twenty-five years of continuous service at the Naval Academy. Professors do not have silver anniversaries, but every veteran—even though his campaigns have been limited to the classroom with its struggles against the ignorance and hard-headedness of youth—enjoys looking back and reflecting.

Old and New Buildings

Mahan in his *From Sail to Steam* rejoices in the fact that his acquaintance with the Navy began with the sailing sloops and frigates, such as upheld the American honor in the War of 1812, and progressed into the marvelous steam cruisers and battleships that won the Spanish War. With a keen interest in naval tradition I have had reason similarly to be grateful that much of the old Academy was still in existence when I took my examination to qualify as an instructor on June 7, 1904. I have been a part, even though a very small part, of both the old and the new. Fort Severn, with its walls seven feet thick, built in 1809 to guard the capital of Maryland and a seaport which was then of no small consequence, stood as firmly as the day it was completed, and served as the Academy gymnasium. "Main Quarters" with the Hospital, dating from Admiral Porter's time, still occupied its position to the east or northeast of the present Officers' Club. All of the Brigade of Midshipmen, as it was then known, messed there; but in the fall of 1904 the Second Battalion (there were only two) on returning from leave was moved to the northeast wing of Bancroft Hall. As the Academic Group had not yet been begun, English, like Mathematics and Modern Languages, had its recitations in Annex C, a long frame structure that ran parallel to Chauvenet Walk, its rear looking out upon the river. Dahlgren Hall, Isherwood Hall, and the Officers' Club were completed and in use. The old Armory standing on the site of the present reservoir was to serve for several years as the chapel. The present Chapel had been begun and during the first year of its construction presented the curious spectacle of a building that was being built

from the top down: that is, the great concrete dome, weighing 3,000 tons (the outer dome of terra cotta is a mere shell separated by a wide air space), was erected on eight exceedingly tall shafts of ferro-concrete, six by two and one-half feet in cross section, which carried the entire weight. It was not until the concrete dome was finished that the work of raising the light brick walls and the inner plaster walls began.

Before the Chapel was completed, General Horace Porter had discovered the body of John Paul Jones in Paris, and the hero who had been denied the expense of a funeral by the American minister in 1792 was given fitting honors when his remains were identified 113 years later. They were brought to America by a special squadron and on being received at the Naval Academy with appropriate ceremonies were placed in a small brick mausoleum, built for the purpose, between the Administration Building and Lovers' Lane. In April, 1906, the formal exercises connected with Jones were held, and President Roosevelt, Ambassador Jusserand, General Porter, and Governor Warfield were the speakers. Then the casket was moved to Bancroft Hall, being placed under the stairway leading to Memorial Hall. But John Paul Jones, adventurous to the end, would not rest until he was provided with a suitable resting place, which was found in the Crypt of the Chapel when Congress appropriated $75,000 for the purpose.

One by one the old buildings were demolished as the new were available. Even old Fort Severn in 1909 was razed to the ground, preparations being made so quietly and the work done so quickly that when outraged protesters of the Daughters of the American Revolution and other patriotic societies arrived on the scene they found nothing more than foundations to plead for. Still there was the old frigate *Santee*, the station ship where many a midshipman offender of ancient times experienced his thirty or sixty days of sea service, and where the officer in charge of the ships and his family resided. She was made the subject of poetry and romance by her adventurous crew, but few or none had reason for feeling so tenderly as I—that, however, is another story. In 1912, having been pronounced insanitary, she was ordered to be vacated by both midshipmen and the officer's family, and on one April morning of that year she was discovered to be resting on bottom, sunk at her moorings, the tide gurgling through her half open ports.

Thus the yard has come to have the appearance which we find today, when the only survivors of the old Academy consist of the two guardhouses that flank either side of the Maryland Avenue entrance. Here the candidate reporting to be sworn in may well pause, for in many a case he has caught up with his father. Here the sire paused, looking at the same bricks, the same river, half hidden but glittering through the trees, and had the same triumphant feeling as, head high in the air, shoulders thrown back, he entered upon his naval career.

Increased Number of Midshipmen

An emergency was recognized as existing after the Spanish-American War, when, in consequence of the many new ships, the officer personnel was insufficient. To meet this, Congress passed in March, 1903, a bill doubling the number of appointments, allowing for each senator and representative not one but two midshipmen. This provision was to continue for ten years. As a result the enrollment of the Naval Academy, which in 1902-03 was 393, had grown in 1904-05 to 823. This was bound to bring changes in organization and methods of instruction. Many of the officers, however, were perturbed, as indicated by a remark of a colleague of mine, Lieutenant "Pete" Russell: "Really, what can one do with this huge plebe class of 297 midshipmen? Fourteen in a section is an impossible number. Eight is the proper size, and with such one could hope to do something." If he had lived to see five midshipmen allowed for each senator and congressman in the World War, and the plebe class that in 1918 flooded into the Academy, numbering 963, he might have had added cause for reflection. Six hundred has been the approximate size of the plebe class during the last two years, and this has given ambitious instructors perhaps quite enough to work with.

Changes in Curriculum

All candidates who applied for admission to the Academy twenty-five years ago were examined in (1) punctuation and capitals, (2) spelling, (3) grammar, (4) geography, (5) United States history, (6) world's history, (7) arithmetic, (8) algebra, and (9)

geometry. Since five or six of these subjects are among those usually taught in the lower schools, the youth who had left them so far behind as to be graduating from high school, or to be finishing his first or second year in college, was far from being ready to take the examination. A large number of special preparatory schools made it their business to cram for examinations and the more experienced masters reaped a golden harvest. This continued until 1920, when admission by certificate in lieu of examination was granted to those who were graduates of approved high schools or students in college, provided that their courses conformed with certain requirements laid down. In 1923 the regular examination, which still was given for those who could not qualify by certificate, was changed to correspond to the general requirements outlined by the College Entrance Examination Board. The elementary subjects were dropped and the subjects prescribed were very nearly what they are today: namely, English composition and literature, United States history, ancient history, algebra, geometry, and physics. The one further change came in 1925 when those entering by certificate were required to present not only a sufficient number of acceptable credits but also to pass what was known as a "substantiating examination"—a general examination in mathematics (algebra and geometry) and in English (composition and literature). On the introduction of the system of admission by certificate some Academy graduates were fearful that the institution would suffer from a lowering of standards. But inasmuch as the number of candidates passing the substantiating examination has run at times as low as 32 per cent their anxiety has been allayed.

In 1912 the old-time six-years' course of the midshipman, the last two years at sea, was reduced to four years, the diploma being followed immediately by a commission. This was a change not so much in study or training as in rank. Since it advanced by two years the time when the graduate might marry he regarded it as highly important.

"Semi-ans" and "ans" were abolished in 1923, and with the week in the term that had been devoted to each went the month of review, commonly dull and rather mechanical. The course in each branch was considerably extended, monthly examinations became more incisive, and in spite of the assistance of frequent short reviews the casualty lists were long enough to satisfy even the most relentless.

Naval education in general has gone forward by leaps and bounds during the period we are considering; probably the greatest gain has consisted in the establishment of the Postgraduate School at the Naval Academy and the special schools such as the Submarine School at New London and the Aviation School at Pensacola. Every young officer has the opportunity to continue his study after graduation, and comparatively few can avoid it. In the Academy itself the most marked changes are due to the introduction of courses for the study of electricity, including radio, and of aëronautics. Thus the Department of Physics and Chemistry has become Electrical Engineering and Physics; Seamanship is Seamanship and Flight Tactics; and Marine Engineering and Naval Construction is now Engineering and Aëronautics. The Departments of Mathematics and Mechanics have become fused under the name of the former. The Department of English and Law, on transferring international law and military law to Seamanship, became the Department of English, which name it still retains, although fully half of its courses are in history. Since my activities have been particularly concerned with this department I trust I shall be pardoned if I dwell with some detail on the changes it has undergone.

In 1904 the study of English was largely the study of spelling, grammar, and rhetoric. To promote the cause of accurate spelling, each midshipman at the end of the week was supposed to turn in an official report recording his delinquencies, like the following:

SIR:

I respectfully state that, during the week ending October 4, I misspelled the following words:

don't,	October 1.
too,	October 1.
often,	October 2.
despair,	October 3.

Respectfully submitted, ...

Sometimes the careless speller was still careless, and failing to consult his dictionary, misspelled a word also in his spelling report. Then he was ordered to turn in a special spelling report which read like the following:

SIR:

I respectfully state that, in my report of mis-

spelled words dated the fifth instant, I misspelled the word written ten times herein, as follows:

despair despair despair
despair despair despair
despair despair
despair despair

Respectfully submitted, ...

In the study of grammar and rhetoric the class labored through three textbooks of rhetoric and two books of exercises dealing with words and sentences. A unique feature of the course was "Craig's Rules for the Use of Shall and Will," formulated by the head of the department two decades earlier and printed on a slip which was to be pasted in the textbook. It was not the application but the memorizing of the rules that apparently was deemed all important, and the midshipman looking for "dope" soon discovered that "Craig's Rules" were certain to appear in the monthly and also the semiannual examinations. There was an occasional short theme, but with no reading or study of literature it was a dull course.

In the study of naval history the course was limited to the achievements of the American Navy, and, in order to avoid the Sampson-Schley controversy, was stopped short of the Spanish-American War. Thus midshipmen graduated knowing nothing of Drake, Blake, Rodney, Suffren, Jervis, Nelson, Tegethoff, and Dewey. When naval history came to an end at the middle of the third-class year, the second term was devoted to English literature, one hour a week. There were fifteen exercises to cover the field, and as many of the assignments were on the lives of the authors, there was only a momentary glimpse of literature. It is so easy, however, for a later age to criticize. I wonder what the new generation will say of us.

The raising of the standard of entrance requirements has been a life-saver to the Department of English. When the changes of 1920-23 were effected we could presuppose on the part of the fourth-classman at least three years' study of English in the high schools, and many of them had had more. Accordingly we could give advanced work in composition and after two or three months change to a survey course in English literature. This begins with Malory, Spenser, and Bacon, includes three plays of Shakespeare, and does not end until we are reading the English and American authors of the present day. Naval history has been broadened so that it is a study of the sea power of all the principal nations and the influence of sea power upon history. This is followed by a substantial course in the political and social history of the United States. In the second term of the first-class year the climax is reached, so far as this department is concerned, when midshipmen are studying modern European history, beginning with 1789 and carrying it on till they are discussing the conditions and problems following the World War. Friday evenings are given to the department for public lectures, and the interest of the midshipmen is stimulated and broadened by listening to such speakers as the following (the schedule of 1929): Professor Edward Raymond Turner, Johns Hopkins; Provost Charles Seymour, Yale; Professor James T. Shotwell, Columbia; Dr. Leo S. Rowe, Pan-American Union; Lieutenant Commander C. E. Rosendahl, U.S.N., commanding U.S.S. *Los Angeles;* Professor Stringfellow Barr, University of Virginia; Dr. Edmund Walsh, Georgetown; Professor William E. Lingelbach, University of Pennsylvania; Professor George H. Blakeslee, Clark University; Rear Admiral Gordon Campbell, R.N., and the Hon. Nelson T. Johnson, Assistant Secretary of State. Such a group of lecturers would be a source of pride to any institution.

CHANGES IN MIDSHIPMAN LIFE

Even in 1905 midshipmen were lamenting, as recorded in the *Lucky Bag* of that year, that old customs were disappearing: "Unofficial distinctions between classes have practically vanished. Class unity and class spirit are becoming more and more difficult of attainment." It was inevitable that some of the old must go when the enrollment was doubled or trebled, and also when this increased number was in turn trebled. Yet still the Academy goes on. There must be something of great vitality in the spirit that has weathered such extremes. Let me recount a few of the changes.

Affairs of honor or sharp misunderstandings have ceased to be settled by fights. In the old days an empty room in quarters served for the ring, and an upper-classman for the referee. The difference would be settled by light-weight gloves, and discolored eyes and bruised faces later revealed how strenuous had been the effort to reach a lasting peace. Often the combatants for

two or three days would be turned in at sick bay before they returned to duty, the flimsy excuse of a fall being accepted by the understanding doctors. These sanguinary contests ended in 1905 when much publicity and a serious court-martial followed a fight between a second-classman and a youngster. It went to nine or ten rounds, as I remember the story, without any real decision. At its conclusion the second-classman took a warm bath and turning in, went to sleep, a sleep from which he never roused.

Fights have ended, but boxing and almost every kind of intercollegiate sport have increased and flourished. In the old days the football team went to Philadelphia to play the Army, and the baseball team went alternate years to West Point. Otherwise, all contests were commonly on home grounds or waters, in contrast with the present plan of allowing basketball, boxing, swimming, water polo, lacrosse and every important athletic team to play at least one of their games away. Not of least importance in the education of midshipmen is the contact thus afforded with the students of colleges and the glimpses of their grounds and buildings.

The picturesque custom of baptizing the class rings of the incoming first class came to an end five years ago. It chanced that the Class of 1925, who were the performers, was large and the water in the corner of Dewey Basin near the boat shed was crowded to the limit with the hundreds diving in at almost the same instant. A catboat on which many had climbed went down, and one midshipman was soon discovered by his classmates to be in need of assistance. Resuscitation proved ineffectual. In fact the doctors surmised that death had come from heart trouble. Forthwith the ceremony of putting on class rings became a private affair.

Many were the midshipmen of earlier days who studied the "tendencies" in their rooms and had the exhilaration of a smoke without detection, which was a double exhilaration. And almost equally many, sooner or later, were caught and given a heavy assignment of demerits. This little game proved of unfailing interest. It ended when Admiral Wilson became superintendent and all midshipmen were given the smoking privilege.

Christmas leave brought the biggest change. In my first experience as an instructor recitations continued up to 3:30 P.M. Christmas Eve, and the regular study period was observed (supposedly) Christmas night. I could form some idea of the latter for we had a written exercise in naval history at eight o'clock the next morning. The same program followed New Year's Day and the morning after. During the week between, though drills were omitted, recitations continued. But let no plebe of today imagine that Academy and town in the old time knew nothing but gloom. Every midshipman had his Christmas box filled with goodies from home, and never was there such feasting for a week as in quarters. The "rag" formation Christmas morning, when the plebes might safely take unusual liberties, and when brilliant and most unexpected costumes were donned as the first class went about in early hours, supported by the band, to sing their songs, was an occasion of great hilarity. If midshipmen could not go away, every one came to them, mothers, sisters, and other people's sisters, until hotels and boarding houses in little Annapolis were crowded to the last degree and proprietors were in danger of becoming wealthy. Admiral Scales was the superintendent who changed it all by granting four days' Christmas leave. This meant the passing of many old-time customs, but no one protested except the boarding-house keepers. Admiral Wilson was a worse offender, for he increased the leave to ten days, and Christmas became the quietest season of the whole year in the yard. What has been the net result? There is the loss of many study days, not only during leave but after, for midshipmen on their return are dull and sleepy and require time before they again become normal. But the interruption is worth while; it relieves ennui, and the year does not seem quite so unending. I know there is a possibility that some of the commanders and lieutenant commanders may not agree with me in this and in what I am about to say further; nevertheless, I do not hesitate in affirming the belief that the Academy is a happier place today than it was in their day. There are fewer chronic "rhinos." There is not so much "frenching." One does not hear so often of the "prison walls" and the "chain gang." Of course, as all know, such words

are not to be taken too seriously, but it was unfortunate that the joke should often persist after graduation with the young officers of the rank of ensign or junior lieutenant, who not infrequently would utter a prayer that they might never return to the academy for duty.

CONSERVATIVE TENDENCIES

Classes come and classes go but their language continues much the same. This was brought to my attention when writing the biography of Commodore George Hamilton Perkins, who came to distinction as a young officer serving under Farragut at New Orleans and Mobile Bay. In home letters, written during midshipman days, he announced early in the winter of 1853 that he knew he was going to "bilge"; and when the "semi-ans" were held he added that everyone had remarked that they were "stiffer than ever before." Today, seventy-six years later, midshipmen scholastically bankrupt have the same worry, expressing it in the same language, and occasionally one, like Perkins, is turned back a year so that he may have another chance. In the *Lucky Bag* of 1905 a glossary of unfamiliar terms is included and a single glance is sufficient to disclose how much fathers and sons are alike in their speech (definitions are unnecessary for readers of the PROCEEDINGS): "bat," "bone," "brace," "bust," "canned Willie," "Christmas tree" "date," "dewberry," "drag," "frap the pap," "goldbrick," "grease," etc.

In this luxury-loving age midshipmen have maintained their simplicity to a degree that would be the envy and despair of many a college dean if he spoke his mind. In the early years of the period discussed the pay was $500 a year; today it is $780. No one would think of the added 56 per cent as leading to extravagance when the increased cost of outfit, textbooks, uniforms, and everything else is considered. No midshipman has an automobile or motor boat in Annapolis, and without special permission he does not ride in one belonging to others. Years ago an occasional upper-classman had his own canoe, in which he would appear on fine spring afternoons, especially when there was a boat race to watch. But he has not this privilege today. During leave or at graduation he may drive his own fifty-dollar bargain or his father's $2,000 sedan, but during the regular academic year Spartan simplicity still prevails.

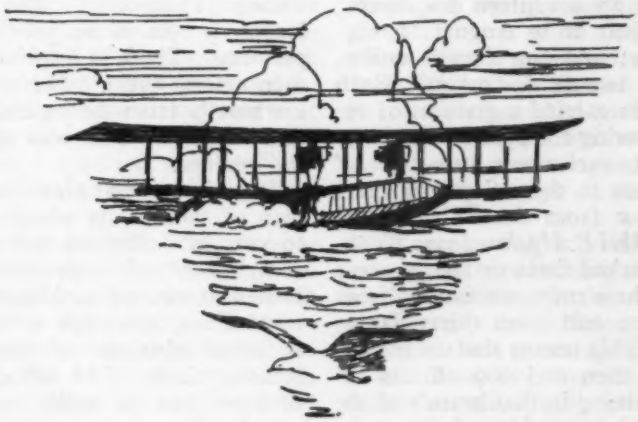
Many of the colleges have been troubled because of the wave of liberalism (or the approach to bestiality) and the corresponding decline of religious observance. Even "good old Yale," the bulwark of Congregationalism, after years of weighing the problem, has changed from compulsory to voluntary attendance at chapel, and the distance her students travel on Saturday and Sunday is limited only by the car, the gasoline, and the desire. Midshipmen report, even on a holiday, at each meal formation and on Sunday morning all go to chapel or to church in Annapolis. A few years ago one announced himself a Mussulman by conviction, as I recall the story, and requested that he be excused from attending any other service. The punishment fitted the crime; he was told he would have to read the *Koran* and demonstrate the thoroughness of his devotion by writing a long religious essay.

The Naval Academy has had two remarkable chaplains during my time, Chaplain Henry H. Clark, who served at this station altogether for nineteen years, and Chaplain Sydney K. Evans, who this spring has completed his twelfth year. Both have been a strong influence because they have made of religion something so cheerful, manly, natural, and far-reaching. It has been something externally healthy, and inwardly closely linked with a man's highest impulses and feeling for service. No matter what a midshipman's church was before he came to the chapel, he knew he would be welcome if he joined in worship. An unusual sight in a confirmation class was afforded a few years ago when a superintendent, his wife, and a captain who was head of a department, with other officers and midshipmen, went forward for confirmation. The most impressive celebration of the Holy Communion I have ever witnessed at any institution was that at the Naval Academy at seven o'clock, Easter morning, 1927. Seven hundred communicants, six hundred of them midshipmen, went forward to the altar rail. And the service of Easter morning of 1928 and of 1929 was each marked by a similar response. In 1927 the graduating class unanimously agreed that they would like to leave behind them something by which the class might be remembered, and presented the beautiful Tiffany

window in the Chapel, north of the altar, entitled "The Commission Invisible." That a class on their twenty-fifth or fiftieth anniversary should make such a gift might be understood, but that, when diplomas were just in sight they should express such a warmth of feeling marked a new advance.

Twenty-five years have brought extensive changes at the Naval Academy. The old buildings have given way to new. Several officers who were midshipmen a quarter of a century ago, now as captains or commanders, have returned for duty as heads of departments. One who was a lieutenant or lieutenant commander about this time in the Department of Ordnance and Gunnery has lately been made admiral and is the commander in chief of the Battle Fleet. I wonder if officers are not more happy at being ordered to duty at the Naval Academy than they were some years ago. I feel certain that the staff of civilian professors has become much more truly a part of the Academy, and that several by their enthusiastic contribution to its life have shown that the class room is by no means the limit of their ideas and interest.

With the broadening influences that have come from the establishment at the Naval Academy of the Postgraduate School, the Experimental Station, the High-Power Radio Station, and the Naval Hospital, together with the extension of the courses in electricity, aëronautics, ordnance, English literature, and history, there has come a great increase of officers, professors, and midshipmen. The change has been almost like the merging of the small college into the university. Yet the midshipmen are still the nucleus. And in spite of the inevitable loss of much that made their life so attractive when everyone knew everyone else and when they could hold so generally to the picturesque customs of the previous half century, still the regiment of midshipmen can be safely relied on for a wholehearted devotion to the Naval Academy and to the old traditions. It is not too much to affirm that they have won nation-wide recognition for a superior manliness and power such as they have never had before.



Training Reservists Aboard Destroyers

By LIEUTENANT COMMANDER RICHARD STOCKTON FIELD, *U. S. Navy*

THE purpose of this paper is to record some interesting and useful facts learned by the writer during the last three summers while engaged in training naval reservists on board the U.S.S. *Bainbridge*. The aim is not to deal with the general question of the Naval Reserve, which is great enough to deserve the best thought and effort of the Bureau of Navigation, but rather with practical matters connected with the execution of the Navy Department's present policy of devoting the services of the Scouting Fleet destroyers for two months a year to exercising the officers and the men of the reserve.

For the last four or five years these destroyers have been used during July and August for training cruises. The summer of 1928, which is typical, was divided into four cruise periods of two weeks each. The first cruise from June 30 until July 14 employed nineteen destroyers; the second cruise, July 14 to 28, seventeen destroyers; the third cruise, July 28 to August 11, seventeen destroyers; and the fourth cruise, August 11 to 25, twenty destroyers. Each of these destroyers carried a division of reservists so that during the summer seventy-three reserve units each made a two weeks' cruise. In addition to these Scouting Fleet activities, the *Fox* from the Third Naval District and the *Abel P. Upshur* from Washington, each embarked three or four reserve units. Each of these units consists of from two to five officers and from thirty-five to forty-five men. This means that each summer some 3,000 men and 200 officers receive valuable training in that branch of the service in which they would probably serve in the event of mobilization.

The reserve units are located on the Atlantic Coast from Portland to Miami and around to New Orleans. Several Middle Western cities are represented; they come from as far as Minneapolis, Milwaukee, and Kansas City. The great bulk of the units are embarked and disembarked between Boston and Philadelphia, but for the outlying coast units the destroyers go as far as Portland and Miami to receive and return their assigned units. The New Orleans and Atlanta men use the port of Charleston. The Middle Westerners pass through Philadelphia.

A typical unit consists of a lieutenant as division officer, a lieutenant as engineer, a lieutenant (jg) as gunnery officer, and about forty-five men of miscellaneous ratings and talents. At the present time most of the officers are from among those who had service of some sort during the war. There are also a few recent Naval Academy graduates among them. These as a rule are graduates who left the service because they preferred civil life and they do not seem to make the best reserve officers although it is the writer's belief that it is to the advantage of a division to have one such among its personnel. The enlisted men are largely people of no previous seagoing experience. There is a sprinkling of ex-Navy men among them. The chief petty officers are mostly from the regular Navy with here and there one who was appointed chief in the reserve.

It is the general plan that the officers and men of these units which cruise from year to year in destroyers will go to fill out the complement of destroyers to be commissioned in case of mobilization. This statement alone is enough to convince the most skeptical observer of the importance of training them. The officer in charge of a division has to make up his unit from people who volunteer and who have a right to withdraw at any time. It is difficult to make the drills attractive and the writer has frequently been told by reserve division officers that the entire success and progress of the reserve unit is based on the summer cruises that they make in the destroyers. A man who enlists in the regular Navy

has a contract to fill whether he likes the life or not. The fact that the Navy is today getting a great majority of reënlistments shows that the life is popular. It is popular not because any naval authorities set out with the idea of putting popularity first but because of good sound principles of leadership which become apparent to the average enlisted man after he has been in the Navy and aboard ship for a period long enough to allow him to settle down and get used to things. How long is such a period? It varies with the individual but it is certainly longer than two weeks. During his first two weeks aboard ship, an enlisted man ordinarily believes that he has gotten into a terrible mess of strange customs and unheard-of restrictions. It takes months before he settles down and finds a happy life.

The writer believes that since the summer cruise is *the* naval event in the peacetime life of the enlisted reservist and that since his is a voluntary service or what might be called a short contract easily terminated, it is essential that his brief period aboard ship should be made as pleasant and interesting as good training and instruction and the ordinary principles of leadership and discipline allow. To this end a talk should be given to the regular members of the crew before the reservists come on board. When they see the point, which they readily will, the petty "hazing" which a recruit gets will be eliminated. No hammock ladders nor keys to the anchor watch nor left-handed monkey wrenches need be sent for. From the moment the reservist comes aboard he need find only a friendly, though to be sure a superior, regular Navy man to show him how to make up his bunk, stow his locker, etc.

Some weeks before his time for embarkation, the reserve division officer writes to the captain with whom he is to cruise and sends a list of his officers and their qualifications and a list of the names and ratings of his men. The ship has to send out enough officers and men to make room for the reserves. It is highly important that each officer have a bunk and a regular place to put his clothes. If at all possible each officer should be in a stateroom because it is a nuisance for all concerned to have anyone sleep in the mess room. It is essential that every man shall have a bunk and locker. The men to be sent out from the ship may be sent on leave and nine-tenths of them are always ready to go, but for the other tenth which has no home to go to, or which has no money, provision must be made. Temporary duty in the destroyer tender is one answer but it has been found in our ship that it is a better solution to put them aboard another destroyer undergoing overhaul in the home yard. The same remarks apply to officers, with the exception that it is seldom that the officer is not willing and ready to take whatever leave is offered. Before these excess men leave the ship their lockers are cleared and cleaned out and their bags and bedding, having been cleaned, are stowed in the after hold and checked off. Before the reservists arrive every bunk, locker, mess table, gun, etc., is tagged with its number. Station billets are made out for each reservist showing the usual details and superscribed in red pencil "forward" or "aft" to emphasize his bunking place. It has been found a good practice to assign no special duties such as messman, captain of the head, etc., to the reservists. They should of course take their part in cleaning, chipping, and painting, but they should be left out of the less romantic assignments which fall to the lot of the bluejacket. It even works out now and then that the man's specialty in civil life is obnoxious to him during the cruise. An expert sign painter cruising with us was given all such work that could be found. After doing a great many paint jobs beautifully, he let his division officer know that he was disappointed to have to do on the cruise what he did at home. As a result he, a landsman, was assigned as helmsman for the last three days of the cruise and went away satisfied.

The cruise begins on Saturday. The men bring their own bedding and bags. As soon as they are aboard, the ship leaves for the rendezvous, the different destroyers arriving at various times up until Monday noon. It has been our experience that with the detailed station bills provided in advance the strange men settle very quickly into their assigned stations and with the encouragement of their "regular" shipmates begin very soon to assume the pose and attitude of man-o'-war's men. The ships go out Tuesday and remain until Friday, when they go to their respective liberty ports. Other officers may disagree, but it

has been the writer's practice to give liberty over this middle week-end to all reservists. The regular crew understands this situation. Every one of them gets leave during one of the cruises and if the regular crew has to stand a few extra watches during this reserve liberty week-end he does not feel imposed upon. In this connection this week-end liberty port should be as far as practicable from the reservists' home town. To send men from Fall River for a liberty at Providence provides no thrill at all. The men from New York do not care to go to other cities. They like Martha's Vineyard, Block Island, and such places. Those from the South and from smaller cities are glad to go to New York or Boston. In 1926 the *Bainbridge* took Atlanta men to New York for liberty. Most of these men had never been to New York before. The National Navy Club kindly furnished the ship with a large number of transit maps of the city, which were a great help to the strangers in finding their way about the subways. After the liberty port the ships gather again at the rendezvous and work until the day when each must leave to reach its port for disembarking on Saturday. During the two weeks the training schedule is uniform in all ships. The squadrons commander prepares a working plan which utilizes all the time to its best purpose. The routine emergency drills are gone through several times and the engineers are given as much training as possible. It is not generally considered wise to leave any important station such as water tender or throttleman in the hands of reserves without supervision. The reserve gun crew trains intensively after coming aboard and fires a modified short-range practice a day or two before the end of the cruise. This is something really remarkable. These fellows, many of whom have never heard a gun fire, train for ten days and then get up and fire a rapid string of shots and *hit the target.* It is a great comfort to know that green American boys can be taught, or rather that they can learn, so much in such a short time. During the cruise special effort is bent upon teaching green men how to keep themselves and their clothes clean under the new conditions they find aboard ship. The principles of etiquette and the meaning of "aye, aye, sir," are stressed.

In the writer's opinion it is desirable to have a division cruise successively in the same ship. The period the men are on board is so short that when the officers and men are strangers the cruise is half over before the captain has learned the capabilities of the reserve personnel. On the other hand certain officers who have cruised in the ship the previous summer are known to the captain to be capable of taking a watch and should be put on watch as soon as they come aboard. Having had men the previous year it is possible to make their training progressive, taking up where it was left off. Going to a new ship each summer, the reservists have to repeat a great deal of elementary work because they are strange to the ship's officers and it is natural to start them all afresh. I am informed by reserve officers that their divisions would prize very highly the spirit and background that would be afforded them if they "belonged" to a particular destroyer of the Scouting Fleet. They realize, of course, that they could not always cruise in the same ship, but even if they could make most of their cruises in the same ship it would be a great help from the viewpoint of both the reservists and the captain of the destroyer.

Some of the reserve officers have so much ability that it would be a benefit to the Navy to have them in the regular service. Others are of value only because of their interest in the Navy coupled with their standing in civil life—an intelligent liaison between the Navy and the civilian population. One lieutenant, a university graduate, was in active service during the war and now has charge of a reserve division. He has all of the best qualities of leadership, knows the rules and ways of the sea and of the Navy. His officers are not above average and his enlisted material is average but he has brought his division up to a high standard of efficiency. This officer is not only well qualified to take a watch under any conditions but the writer would consider him to be a fine executive officer for a destroyer. No young naval officer is likely to take much interest in trying to teach the rudiments to a reserve officer past fifty. Even the best of these officers who are now in charge of divisions are rapidly getting too old. It is also true that all of the ensigns and junior lieutenants who have cruised in the *Bainbridge* are too old, and

in his experience during the last three years the writer has not seen any reserve officers who are younger than about thirty. The officer personnel of the reserve is generally a veteran organization. They should be getting in some young ones. Of course it is realized that the training activity at the several universities is bringing up young officers but the point made here is that these divisions should include some youngsters to take the place of the older ones as they get out.

It is my belief that there are some officers in the reserve divisions who should be eliminated. They come aboard for two weeks and as they leave the commanding officer makes out fitness reports. As a rule they all get good fitness reports whether they deserve them or not. One feels that two weeks is too short a time in which to judge an officer and that it would be too bad to hurt the feelings of the reservist by giving him a discouraging report on too brief observation. One also has the feeling that to recommend the disenrollment of an officer might tend to disrupt the morale of the whole unit which is none too steady anyhow. I have been told, however, by excellent reserve officers, that they believe the captain's marks should be more strict and that some of the poorer material should be eliminated. If we had the same ones repeatedly the captains could verify their opinions and give unsatisfactory reports where deserved without fear of being unjust.

Some time before the reserves come on board it is well to acquaint the officers with the conditions they will find. The following letter has been used and it is believed to meet the purpose satisfactorily.

MEMORANDUM FOR OFFICERS OF THE NAVAL RESERVE CRUISING ON U.S.S. *BAINBRIDGE*

1. We are glad personally and officially to have you on board and intend to make your cruise as instructive and pleasant as possible. Make yourselves at home when you get aboard and feel that you belong to the ship and that the ship belongs to you, just the same as if you were permanently attached.

2. During each one of the cruises some of the ship's officers will go on leave to make room for the reserve officers. It is not practicable, however, to reduce the ship's officers sufficiently to provide ample stateroom facilities for all, and some of the reserve officers may have to sleep in the emergency cabin, or possibly on the transoms. In any event you will each share the wash-basin facilities with regular occupants of staterooms and there will be room for every one to hang and stow his clothes in staterooms. On each cruise the ship will visit some port for liberty during the middle week-end and in addition there will be liberty at Newport. Officers desiring to bring civilian clothes may do so but it is suggested that one suit is enough. Blue uniform only need be brought. Atttention is invited to the fact that stiff starched collars are required with uniform. During these cruises our mess attendants have to wait on a large number of officers and for that reason you should make your demands on them as light as possible. They will make up your beds, take care of your shoes, serve food, etc., but will not be able to press clothes nor do much in the way of valet service. On account of the crowded condition each officer will be expected to do what he can to keep straightened the space he occupies. Your mess bill will be one dollar a day. Lieutenant..... .....is mess treasurer. Unless it is inconvenient to you the mess bill should be paid in advance. There are no laundry facilities in the ship. Tailor, cobbler, etc., are in the tender; the ship's service store sells the usual small articles in the *Bainbridge*.

3. The officers attached to the ship are:

.....

.....

4. After you get aboard read the ship's organization. Read special instructions for the training of reservists. Read the brass plate on the forecastle and learn about the man for whom the ship is named.

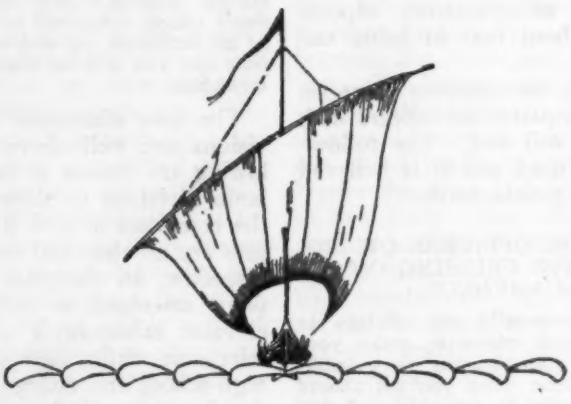
5. You will sit at the mess table according to your rank. Although the ship's officer with whom you are assigned to serve may not be senior to you, you will understand that in all matters relating to your duty and instruction, the ship's officer concerned will, in the performance of his duties, be representing the commanding officer and you will be expected to take directions from him.

The men who make up these reserve divisions are well above average. The following are chosen at random from the Atlanta divisions to show the occupations of the reservists in civil life. Among the officers are an electrical engineer, an insurance inspector, an electrical salesman, a boiler-plant salesman, a railway mail clerk, an elevator salesman, a school teacher, and a telephone traffic supervisor. The men are high-school and college students, bookkeepers, insurance clerks, railroad clerks, dairymen, farmers, draftsmen, bank clerks, blueprint operators, sign painters, hospital foremen, restaurant owners, and lawyers. One first class boatswain's mate is an artist, one seaman second class is a dentist, one a newspaper composer. One hospital apprentice is a doctor while one seaman second is

a baker. The following are among the officers of the Twenty-Ninth Fleet Division of Hoboken: a ship operator for an oil company, a mechanical engineer manufacturing auto parts, a salesman, an electrical engineer, a life-insurance actuary, and a boatswain who is a fire-boat mate. A gunner's mate is a tailor, a machinist's mate is a policeman; there are bookbinders, bleachers, carpet layers, carpenters, mill foremen, a stock-exchange runner, several government clerks, a color mixer, and a wholesale drug salesman. This division has several high-school and college students. From another place we had a chief petty officer who was a fire-department lieutenant and a fireman who was a ticket-taker at a movie palace. Of all the men we have had, every one had some kind of a regular job and not one was of the class described as common labor.

To aid in spirit building it has been our practice to encourage the reservists to make a banner out of bunting with the name of the ship and the year. This banner is included in a photograph taken of the division at the end of the cruise and the banner and a copy of the photograph are available to go on the wall in the reservists' armory as a souvenir of the cruise.

There is no question but that the destroyers go backwards a bit during the two months devoted to training reservists. With thirty to forty men of the regular crew out of the ship the progressive training of the ship's company is retarded, and strange, new men aboard ship will naturally make more dirt than they clean up. However, it is the opinion of the writer that the benefits of these cruises far exceed the disadvantages and in addition to this, the personal side of the experience has been pleasant. To break the monotony of the yearly grind by having some new people about, people from various sections of the country with varying interests and fresh ideas, new contacts, new friends for the Navy and for Navy men; this is good for us. The reservists profit from these cruises and so do we.



Gunnery Problems *of* 1783

By LIEUTENANT COMMANDER D. P. MOON, *U. S. Navy*

THE shades of John Paul Jones, Decatur, and Bainbridge lurk in the background of the musty and yellowed pages of *The Practical Sea-Gunner's Companion*, written by William Mountaine, F.R.S., and published in 1783. Fighting was more romantic in those days—if not so complicated as now. As one sits in the Congressional Library and ponders over this epitome of knowledge of olden gunnery, visions of ships lashed together fighting yardarm to yardarm, boarders with flashing cutlasses, red-hot shells, hand grenades, powder chests, and musketry from the tops, all relics of bygone days, are brought to mind. Nearly a century and a half ago this book was the last word on a gunner's duties.

We cannot help but wonder if gunnery textbooks of today will seem as odd to our descendants a century and a half hence as do the problems and answers propounded in this old book. Yet with all that seems strange, there is much which still has a modern note.

For example in the preface appears this statement which is as true today as it was then.

> It is not possible (in the Nature of Things) for any one Kingdom to continue long in a State of Peace and Tranquility; and even during the Time of (what we call) Peace, there is a Necessity for military or naval Dispositions, or both, in order to bear some Sway, and prevent surprize.

Further in the preface appears a paragraph advocating the necessity for "judgement duly regulated by practice and experience." Most of the reasons given still have a bearing upon modern gunnery.

> And Judgement (duly regulated by Practice and Experience) is peculiarly necessary in this Business, as there are so many Uncertainties incident thereto; as for instance, if a Gun is too long, the Ball is retarded by too much Friction; if too short, part of the Powder is discharged without Firing, and this is often the Case in duly proportioned Artillery, especially if the Powder has received any Damp; and this is one Reason perhaps, why the Proportion of Powder must be diminished, when Guns are heated by frequent Firing, for the Warmth of the Metal exsicates and dries it, so that the Whole is more easily ascended; the Air's Resistance has also great Effect, and is different at different Times and Places; the Situation of the Vent Hole, which (I believe) has never yet been truly determined; besides, the Differences that arise by the unequal Strength of Powder, the Unevenness of the Chase (notwithstanding the greatest Care taken in casting and boring) the fitness of the Shot, inequality in Ramming, or bruising the Powder, and the different Motions of the Ships engaged; all which in their Turns, are so many Impediments to Perfection.

Among the duties laid down for a gunner, armorer and gunsmith in this ancient tome, are many that have a familiar ring, while others have no counterpart in this age.

> He is not to go or send any one into the Powder Rooms, but by Leave of the Captain, and to take Care that they have nothing about them that will strike Fire in clashing or falling.
>
> In time of Action, he is to reduce the Allowance of Powder by degrees, until the same is lessened to One-third of the Weight of the Shot: He is not to swab a Gun when it grows hot, for fear of splitting.
>
> He is to observe upon the Guns, the Notches or Sights on the Base or Muzzle Rings, for the better taking Aim.
>
> He is not to load the Guns with unfit Mixtures, which greatly endanger their splitting.

The gunner is told how to solve a number of practical problems. The nature of these in contrast with those of today shows how great has been the advance since the time these instructions were written.

> Problem: *To find the Flaws and Cracks in a Piece of Ordnance.* Take a large Piece of dry Touchwood, and set in on Fire in several places at once; when near half its Superficies smokes, put it into the Chase, and stop the Muzzle and Touch-hole both together: If the Gun be without Cracks, the Touch-wood will be extinguished for want of Air, otherwise it will burn out, and perhaps you may see the Smoke come from the cracks.
>
> Problem: *To find if a Piece of Ordnance be Honey-comb'd.* Take a Looking-glass, and re-

flect the Beams of the Sun into the Chase, which will illuminate and render visible the Pores in the Concave Superficies: But if the Sun does not shine, put a Candle upon the End of an Half-Pike and thrust into the Chase, and that will shew the Pores: This Method is chiefly used in examining the Mortars.

Defects are still found in pieces of ordnance, but the technique of finding them has advanced somewhat, as the most casual reader can surmise.

Evidently the regularity and strength of powder was not all that it should be.

Problem: *To find how much Powder is sufficient for any Piece of Ordnance, true bored or not.* A Gun having its just Allowance of Powder is free from the Danger of splitting, and the Shot capable of the greatest Execution; but to do this exactly, is one of the *greatest Mysteries* in Gunnery. First, from the uncertain Quantity of the Metal, and secondly, from the Strength of the Powder: However, various Rules are prescribed for this Purpose, some of which are as follow, viz.

It must be taken for granted, that some certain Charge is sufficient for some certain Piece; they say, as the Cube of the Chases diameter you know, is to the Cube of that you know not; so is the given Quantity of Powder, to that required.

The effect of different types of powder was impressed upon the gunner.

The young Gunner must take great Care, that he do not give his Ordnance Pistol Powder instead of Cannon; for if he do, and the same Quantity, she is in danger of splitting, the Difference of their Strength is so great: It has been observed, that the Quantity of the same Strength has done it, because taking up less Room, it possesses less Metal than Cannon Powder.

The hot-gun effect, which has been periodically rediscovered from time to time and is still with us, was known in those days.

But the young Gunner is to observe, that in five or six successive Firings the Gun grows hot, and the Charges of Powder must be gradually diminished, until it be reduced to One-Third of the Weight of the Shot.

Rough and ready methods were used in fitting "Grenades" to the bore of the "Mortar."

A Grenade is a concave Sphere of Iron, filled with Corn-Powder, with a Fuze to set Fire to the Contents, and thereby break the Shell when it arrives at the designed Object. If the Grenade be too small for the Chase of the Mortar or Co-horn, marle it with slack twisted Thread, brush it all over with hot Pitch, throwing Brick-Dust thereon, 'till it is fit for the Bore.

For close work, an effective means was provided to prevent a return of the compliment.

If you fear the Enemies tossing them back again, take grey Paper and dip it in Water where Salt-petre has been dissolved; cut this into Quarters as they do Leather for a Foot-Ball, and paste them upon the Shell with the following composition, viz. Take a Quarter of a Pint of Oil of Turpentine, a Quarter of a Pound of Brimstone, two Ounces of Pitch, and the same Quantity of Candle-Tallow, melt all these together, and mix them up with beaten Gun-Powder 'till it is like Paste, and lay it pretty thick upon the Shell, with Cotton prim'd, over this put your paper; and because this will not keep the Quarters on, let them be cut to wrap over and so glewed; opposite to the Fuze put a piece of Cotton, that has been dip'd in the Composition, and when you fire the Shell, touch this with your Match, and it will set the Paper on Fire, which will burn so fiercely, that the most daring will not venture to return it; or small Threads of Twists of Cotton may be made to branch from little Holes near the great End of the Spigot all over the Shell, to carry the Fire to every Quarter.

When boarders were expected, a warm welcome was provided by "powder chests" prepared according to instructions.

How to fix Powder Chests: Nail two Boards together like the Ridge of an House, put under it a Cartridge of Powder, and close up both Ends; then make a Cover like a Sea-Chest without a Bottom, of a convenient Bigness, to put over it, fill the Vacancy with Pebble Stones, Nails, Stubbs of old Iron, etc.

Of interest is the maximum range obtained as well as the maximum velocity.

The greatest Distance to which a Bomb of 5 or 6 hundred Weight can be thrown with the strongest Charge, is between 2 and 3 Miles.

An iron Bullet of 24 lb. Weight, which is the heaviest in common Use for Land Service, such a Bullet fired from a Piece of the customary Size, with its greatest Allotment of Powder (2/3 of its Weight, viz. 16 lb.) has a velocity of 1650 Feet in 1 Second of Time and its horizontal Range by Experiment is something less than 3 Miles; generally about 2-¾.

Will the reading of the Ordnance Instructions of today 140 years hence seem as antiquated to the reader?

Airplane Hydrography

By LIEUTENANT L. M. SAMUELS, *U.S.N.R.*
Hydrographic Surveyor, U.S.S. "Nokomis"

DURING the past four years of the U.S.S. *Nokomis'* survey along the north coast of Cuba we have developed a system of shore-line establishment by airplane photography which has proved very satisfactory.

At the start in 1924 our photographs were taken from an altitude of 5,000 feet, giving a scale of about 1 to 5,000. The practice then was to connect up the air pictures with a triangulation scheme by means of numerous "ground signals," which were horizontal marks of considerable ground spread to insure photographing from altitudes. These ground signals require center tripods or high flags for visibility in locating them from triangulation towers. It was evident that this method would incur entirely too much extra labor and expense and greatly impede progress, so we eliminated ground signals, hoping that our ordinary surveying tripods (already erected for general use) would serve the same purpose. This they did, and together with the triangulation towers, showed plainly enough on these 5,000-foot pictures. The tryout with aërial photography was made in the harbor survey of Cardenas, Cuba; and since it was experimental, the shore line was also run by the standard method, requiring tedious sketches and instrument work. The results of both methods were plotted on the same sheet at a scale of 1 to 15,000 and found to practically coincide, except in inaccessible places, where of course the airplane pictures were far more reliable. Obviously, the pictures represent a much truer line of the shore because the old method requires sketching in between fixed points, and not all observers are adept at these sketches. Captain R. E. Ingersoll, U. S. Navy, was then in command of the *Nokomis* and took a great interest in the aërial photography. With his idea of taking the pictures before establishing the shore line, so that they could be used in the actual field work, we have developed the following system of airplane hydrography which has tested out to our entire satisfaction.

First, blue-print maps of small scale for use in the planes are prepared for guidance of the pilots and photographers and to serve as key charts for plotting the various runs of photographs. A roll of aërial film will take about one hundred pictures and each roll is given a key letter, A, B, C, etc., with respective pictures numbered consecutively, A-1, A-2, A-3, etc., and so entered on the key charts. If the old map of the required section can be secured we use a tracing of it for these blue prints; otherwise an air reconnaissance is made and rough sketches done for this purpose.

Weather permitting, the pictures are taken. We tried out and found (at the suggestion of Lieutenant C. H. Schildhauer, U.S.N.) that an altitude of 10,000 feet, with successive pictures timed so the advance of each negative would be one third its width, was ideal for the work, as these conditions permit accurate orientation and afford the opportunity of using the central portions of the pictures when assembling them. In addition to the general photography, oblique views are also taken to assist in assembling the various runs, particularly in sections of isolated cays so common to our territory. Two or three thousand feet altitude is sufficient for the oblique pictures.

The prints are made in duplicate, one set for the field work and the other for office reference. The shore-line officer starts out on an area about ten miles square with appropriate field set of pictures and blue print of the area showing the established surveying signals. Objects, natural or artificial, which appear distinctly on the pictures and can be identified in the field, are "occupied" with sextant or transit, and angles observed on the surveying signals. An object so occupied is indicated on the picture by a cross or small circle, given a reference number,

and the angles and notes recorded in a field note book. It is not difficult in most instances to find some mark in the field discernible on the photographs such as a small cay, sharp point, house, dock, cleared or bare spot, large tree, etc., and if it is not accessible to the observer, an azimuth and distance is taken to it from a nearby point which can be properly located, and this data is entered on this picture or in the note book. These instrument locations or "fixes" serve as the major control of the areas and are taken about every mile, except that a fix is always observed on a prominent point, and on an isolated cay the minimum number of fixes is two, as far apart as possible, so the cay may be properly orientated on the plotting sheet. Along with the instrument work a study of the shore-line characteristics is made, such as mangroves, sand beaches, kind of tree growth, rocky cliffs with estimated heights, etc., and notes concerning them are entered on the photographs in the field. On returning to the ship or station after a day's work the observer plots his angles as a check, so if any errors are found they may be rectified.

During the plotting season at our home port the field pictures are matched together in a continuous or mosaic formation by tracing with ink on a thin sheet of transparent celluloid the portions of shore line common to connecting pictures, and fitting them together under the celluloid tracing which serves as a sort of assembling template. This part of the work is a little tedious at times when variation in altitude or turning of the plane changes the scale of adjoining pictures, but we average these differences on some selected line so the orientation will be affected as little as possible. This error, however, is not cumulative to any practical extent as the instrument fixes, surveying signals, and tangents from triangulation towers and secondary stations provide excellent control.

The points or objects located by the observer in his field work, as entered on the pictures, are also located on our smooth plotting sheets by his field angles, so that we have corresponding points on both the assembled pictures and the plotting sheet. Checking on these points, the picture data is transferred to a section of thin tracing paper with a precision pantograph, adjusted to compensate the difference in scale between the assembled pictures and the plotting sheet. The pantograph work is best done by the shore-line observer (who naturally would be familiar with the territory) and another operator, one of the two following the shore line and details with the steel point for that purpose, and the other tending the pencil attachment which enters the data on the section of thin tracing paper. The tracing is then transferred to the smooth plotting sheet, making any necessary small adjustments so that the shore line will fit in with the plotted tangents and fixes. We use a prepared transfer paper for this purpose which is slipped under the tracing in position, marking through by impressing a hard drawing pencil or stylus, after the manner of a carbon copy. The transferred data on the smooth sheet is now checked with the pictures for omissions or accidental errors and is then inked in as final. After this another reference is made to the photographs for characteristics of the shore line.

By having the airplane photographs in advance of the actual field work we have prepared some very useful reconnaissance sheets for a coming season's work. Some of these have proved surprisingly accurate and saved many days of reconnaissance. We now have on hand sufficient pictures for probably more area than we can finish in our next season's survey, and with them are enabled to plan ahead and to have a lot of useful data for the work in general.

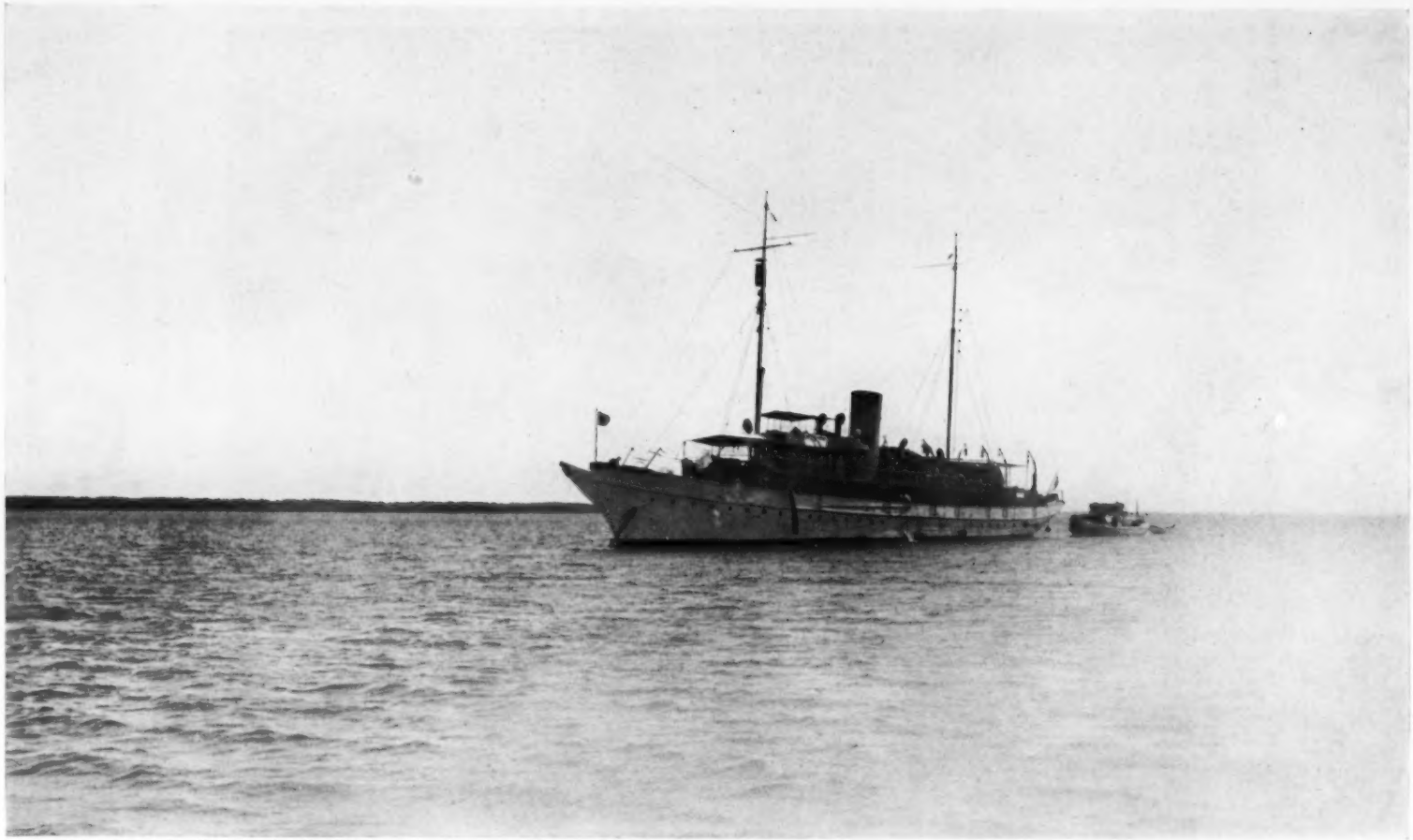
In 1927, under the command of Commander Benjamin Dutton, U. S. Navy, a remarkable saving of time and acquisition of valuable coastal data resulted from a run of aërial photographs between Habana and Matanzas, while locating the prominent Hershey Sugar Mill about midway between these two Cuban cities, situated about fifty miles apart. Our other alternative was by triangulation, which would have required at least two weeks, whereas with plane and ship we obtained this location in about four hours, and in addition the coast line and a great deal of new navigational data for the general chart of Cuba. We believe our photographic position of this mill is more than sufficiently accurate for a navigator's needs.

By the old method of running shore line, four miles a day was fast work for one party, but now with the aërial pictures fifteen miles by one party can be controlled without extra effort, and also a large amount of useful chart data is secured from the photographs.

Courtesy Lieutenant L. M. Samuels, U.S.N.R.

AIRPLANE HYDROGRAPHY

Specimen picture at 10,000 feet of cays in survey grounds of the *Nokomis*.



Courtesy Lieutenant L. M. Samuels, U.S.N.R.

THE U.S.S. *NOKOMIS* ANCHORED IN THE SURVEY GROUNDS AT CAYO FRANCES, CUBA

THE U.S.S. *NOKOMIS* ANCHORED IN THE SURVEY GROUNDS AT CAYO FRANCES, CUBA

Courtesy Lieutenant L. M. Samuels, U.S.N.R.

AN "OBLIQUE" OF THE ENTRANCE TO HAVANA HARBOR

Courtesy Lieutenant L. M. Samuels, U.S.N.R.

ONE OF THE TWO AMPHIBIANS USED FOR LAST SEASON'S AIR PICTURES

Courtesy Lieutenant L. M. Samuels, U.S.N.R.

MOTOR LAUNCHES OF THE *NOKOMIS* EXPEDITION

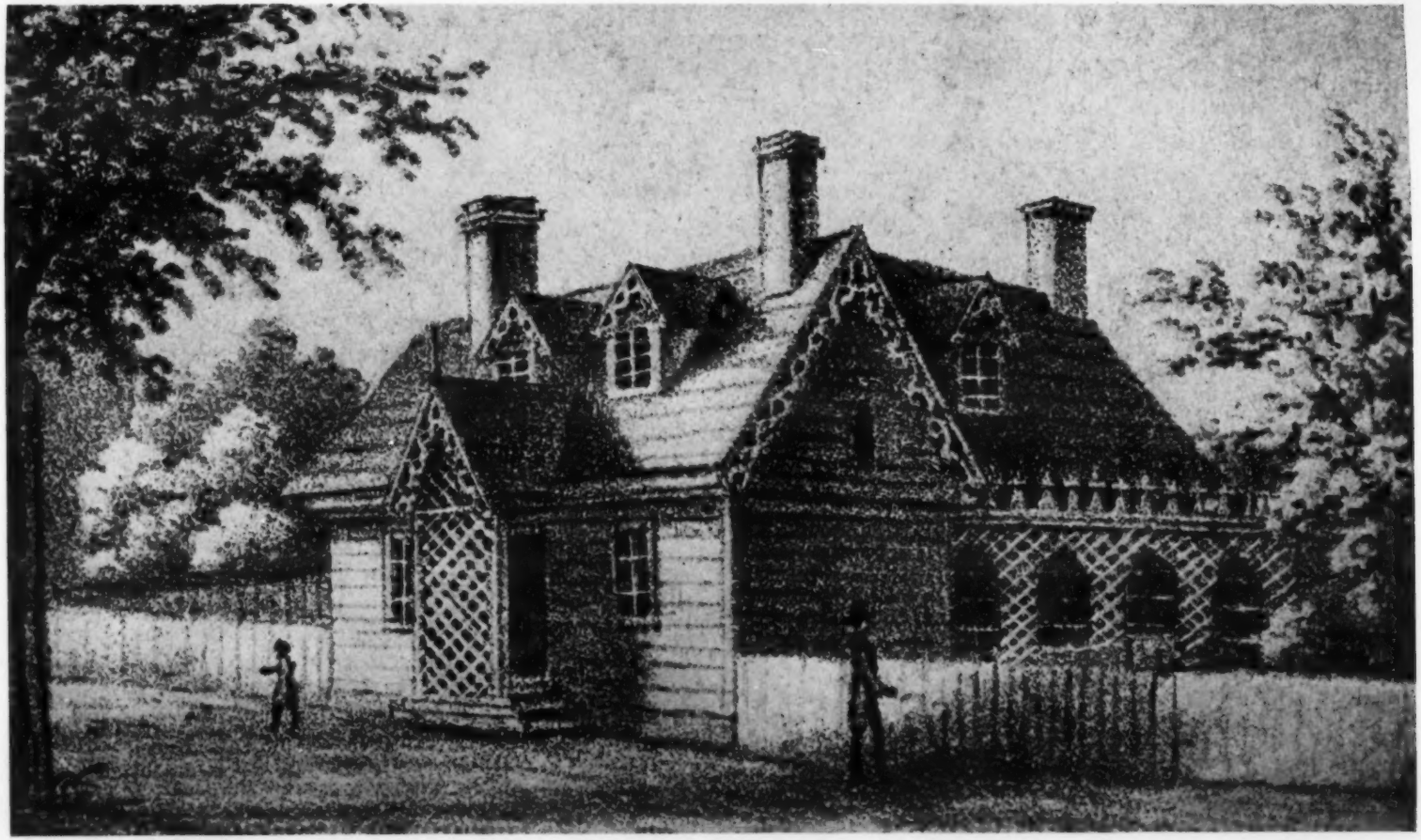
Thirty-six-foot twin-screw motor launches in convoy of the ship across the Florida Straits from Key West to Cuba under their own power.

Courtesy Mr. P. H. Magruder

OLD GREENBURY POINT LIGHTHOUSE

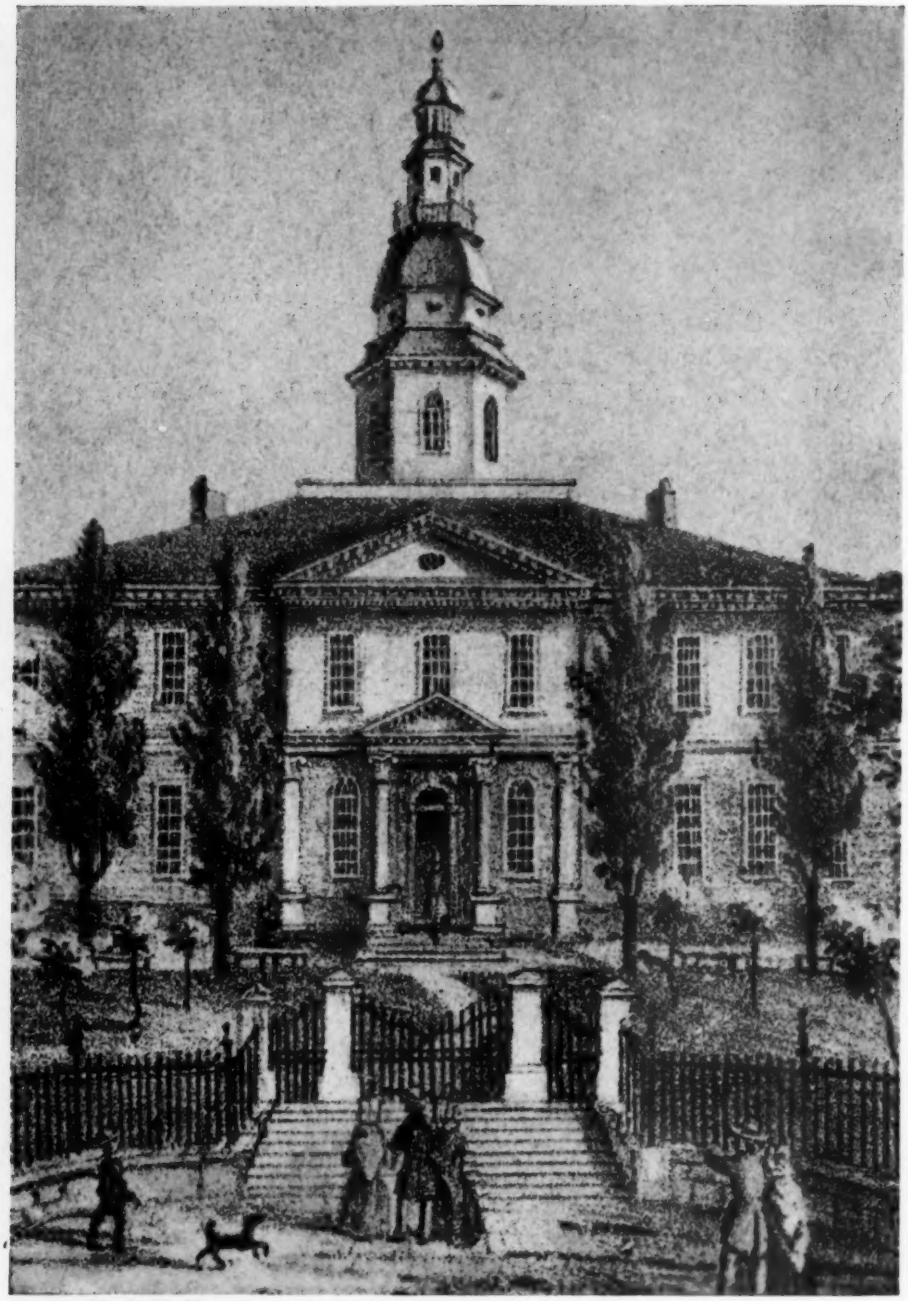
Guarded entrance to Annapolis Harbor from the early eighteen hundreds to 1892, when it was abandoned and washed into the bay. Probably standing when the British fleet passed Annapolis in 1814.

Guarded entrance to Annapolis Harbor from the early eighteen hundreds to 1892, when it was abandoned and washed into the bay. Probably standing when the British fleet passed Annapolis in 1814.



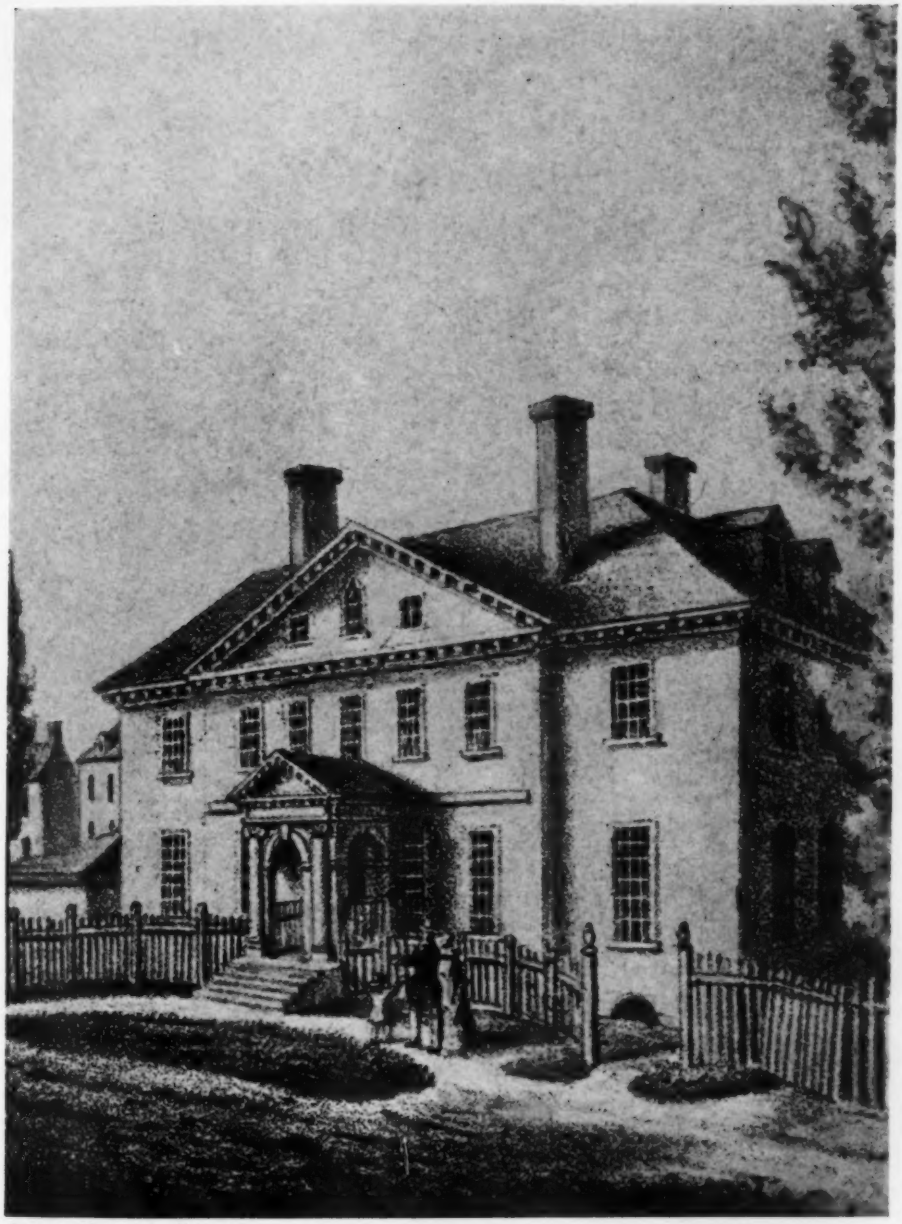
Courtesy Mr. P. H. Magruder

OLD SHAKESPEARE HOUSE, 1845
Demolished about 1850.



Courtesy Mr. P. H. Magruder

STATE HOUSE, 1845



Courtesy Mr. P. H. Magruder

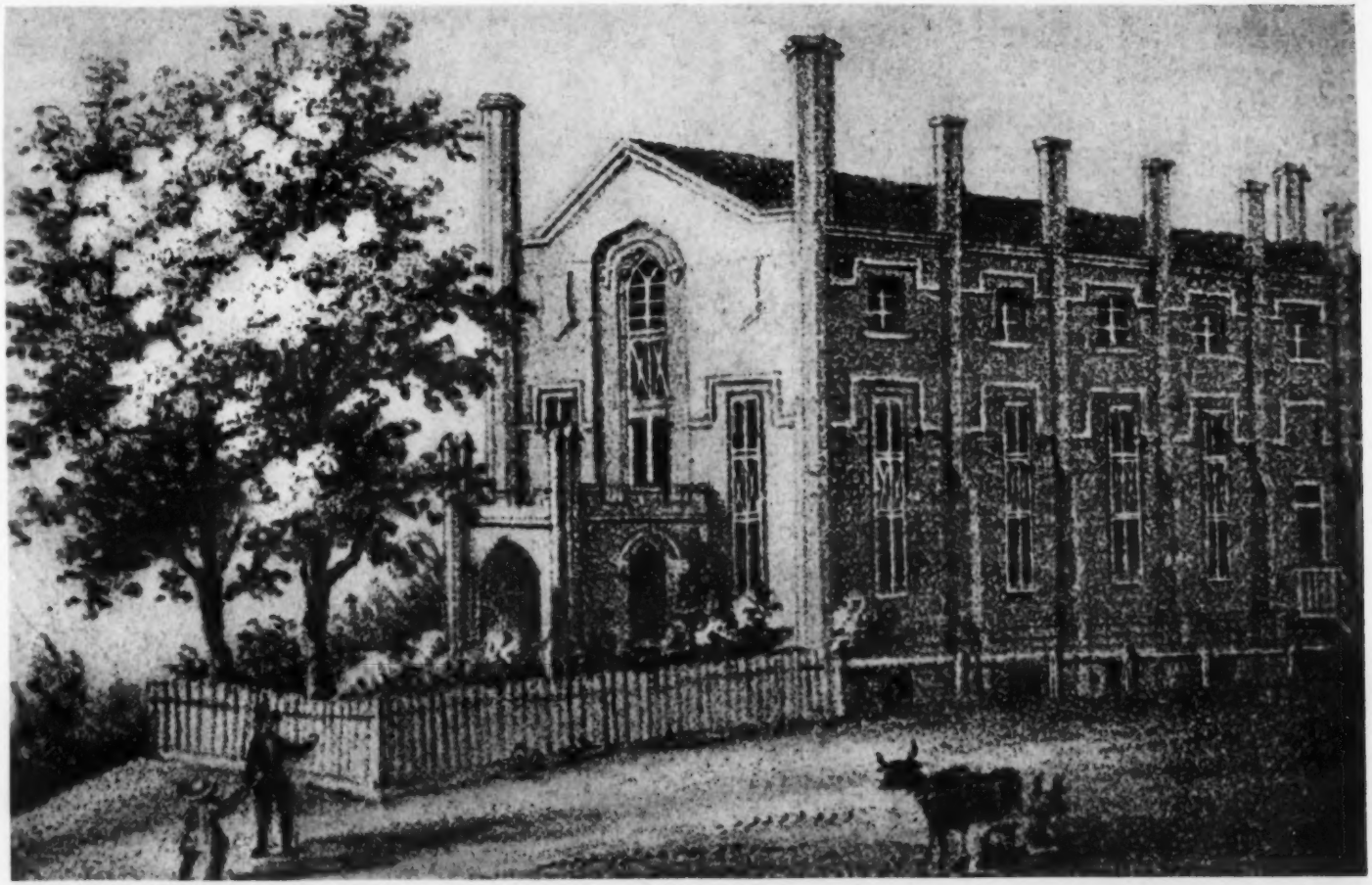
OLD GOVERNOR'S MANSION, 1845

Afterwards superintendent's office and library. Demolished in 1902.

Courtesy Mr. P. H. Magruder

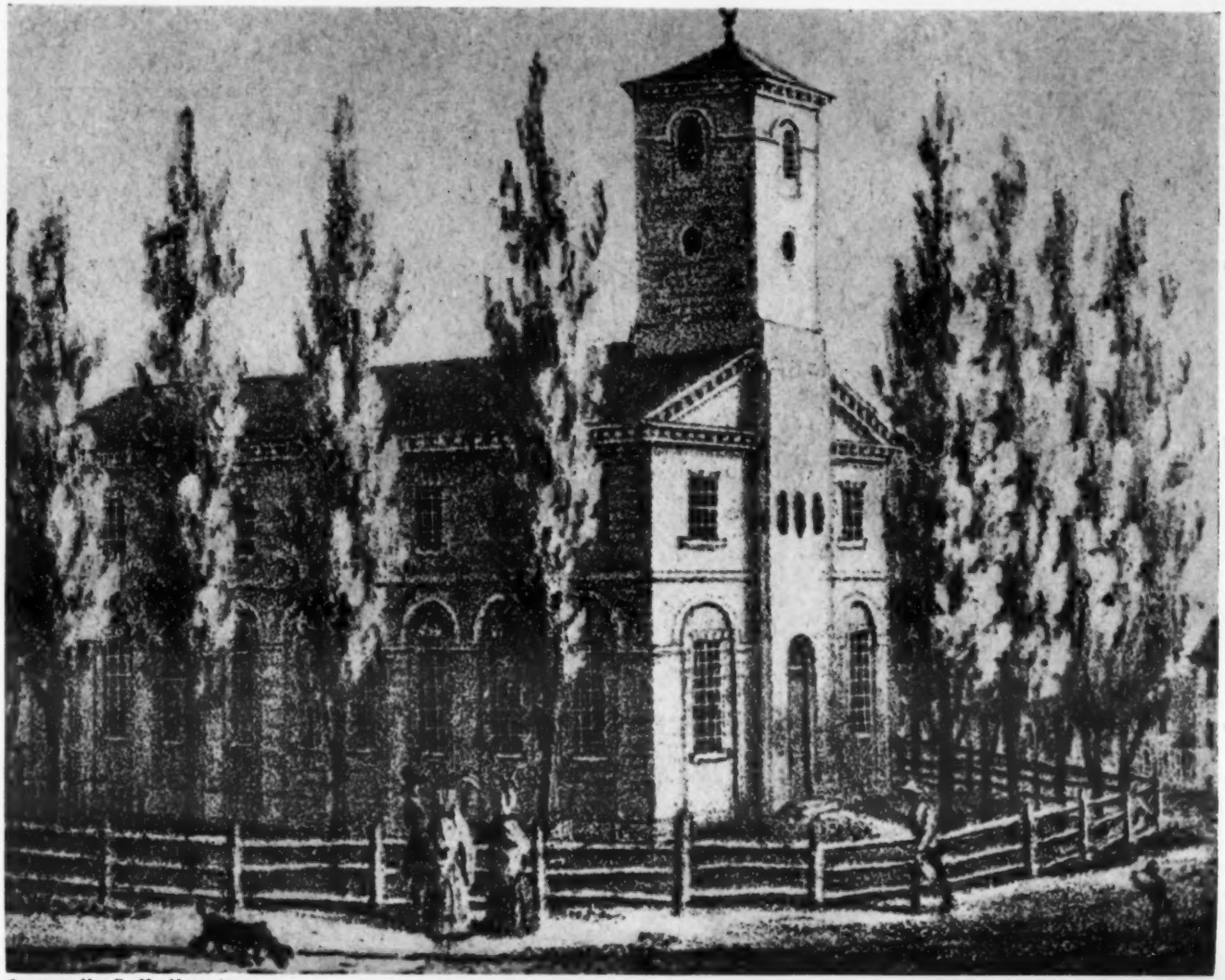
THE OLD DULANY MANSION
Superintendent's quarters from 1845 to 1883, when it was demolished.

Superintendent's quarters from 1845 to 1885, when it was demolished.



Courtesy Mr. P. H. Magruder

HUMPHREY HALL, ST JOHN'S COLLEGE, 1845

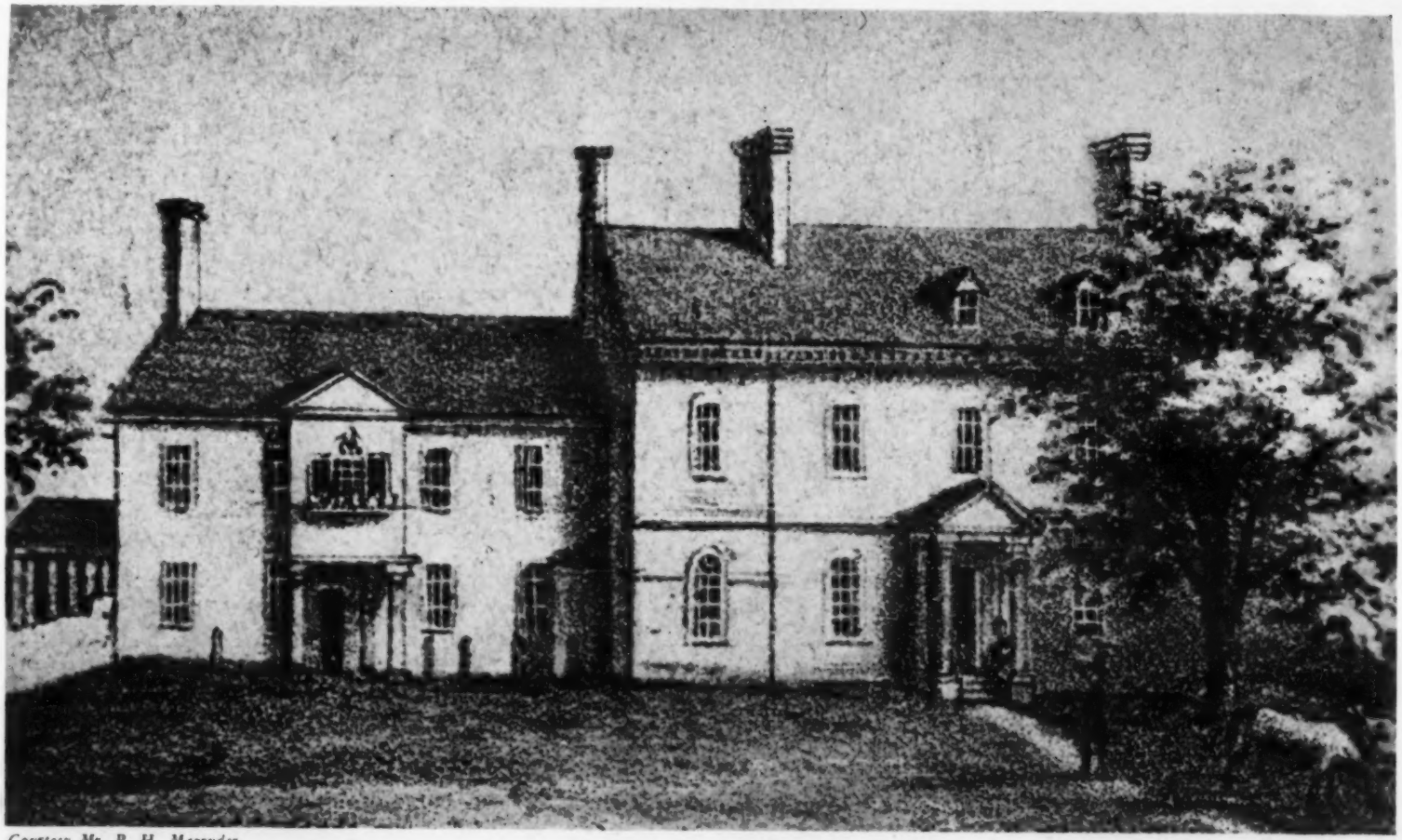


Courtesy Mr. P. H. Magruder

OLD ST. ANNE'S CHURCH, 1845
Destroyed by fire in 1858.

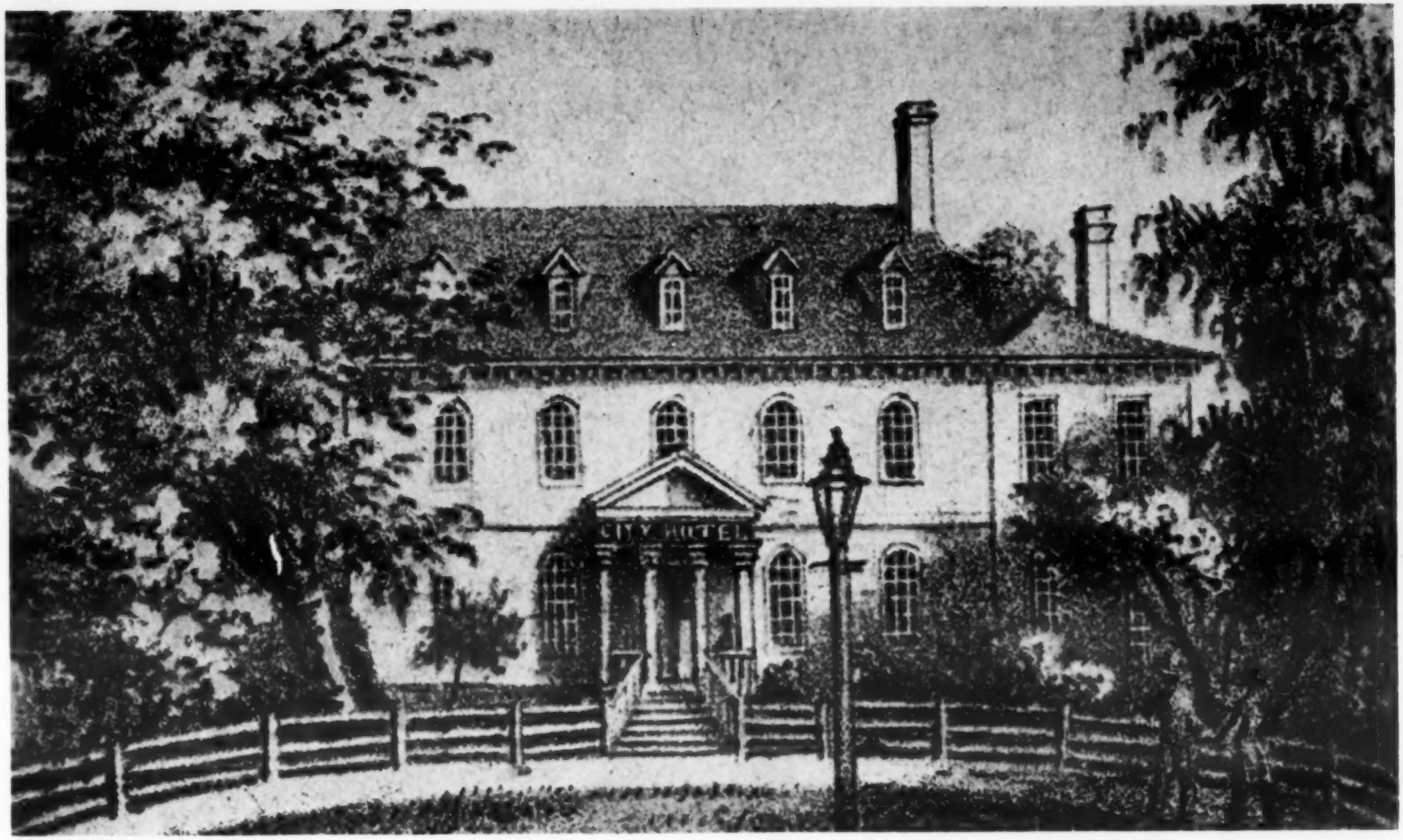
Courtesy Mr. P. H. Magruder

OLD ST. ANNE'S CHURCH, 1845
Destroyed by fire in 1858.



Courtesy Mr. P. H. Magruder

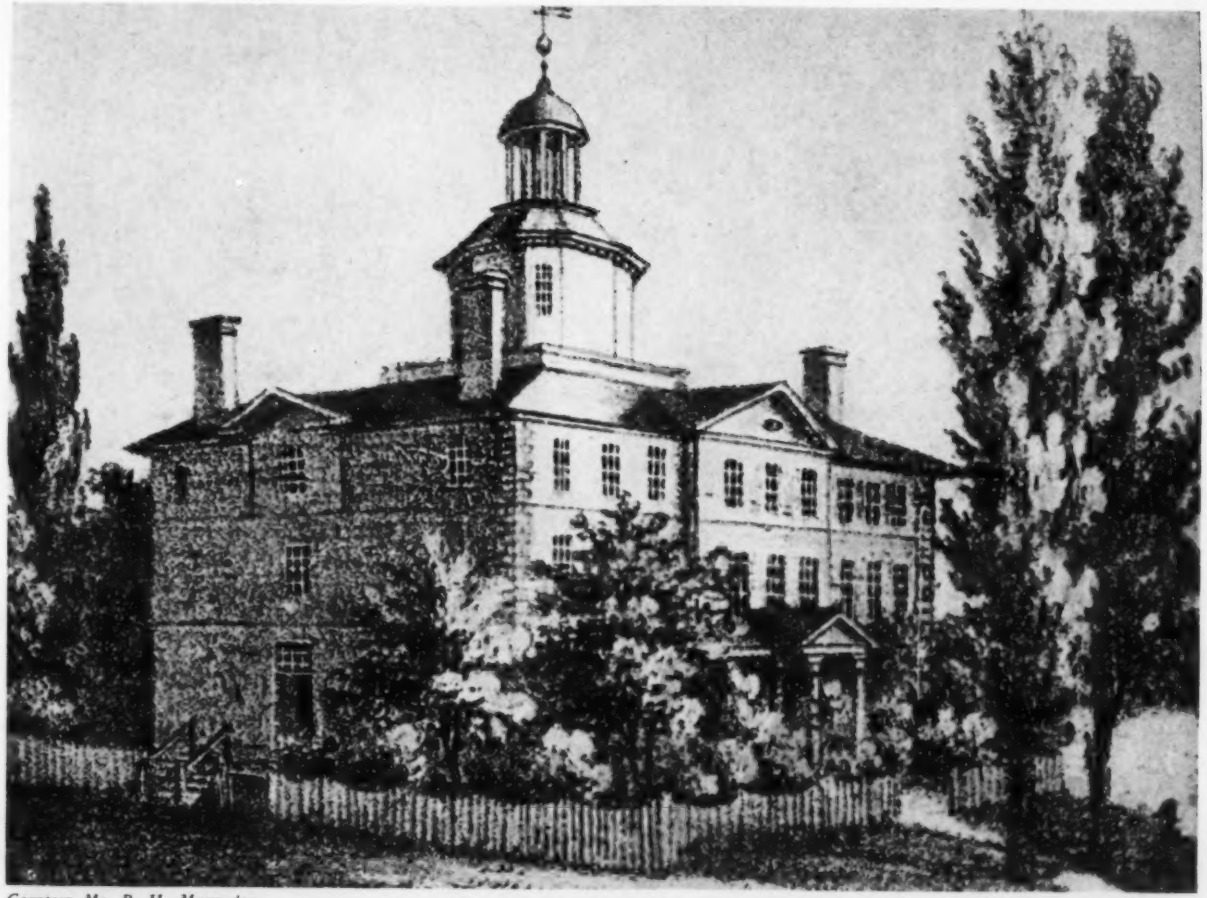
OLD CARROLL HOUSE
Part of which was demolished in about 1850.



Courtesy Mr. P. H. Magruder

OLD CITY HOTEL, 1845, AND PRIOR TO THAT DATE
As it was when Washington made his visits.

As it was when Washington made his visits.



Courtesy Mr. P. H. Magruder

MCDOWELL HALL, ST. JOHN'S COLLEGE, 1845

THEATRE.

On WEDNESDAY, *December* 11, 1793,

Will be Performed, A TRAGEDY, called,

ISABELLA:

OR,

The Fatal Marriage.

Count Baldwin,	Mr. *Green.*
Biron,	Mr. *Fennell.*
Carlos,	Mr. *Marſhall.*
Villeroy,	Mr. *Wignell.*
Sampſon,	Mr. *Bates.*
Belford,	Mr. *Cleveland.*
Pedro,	Mr. *Francis.*
Iſabella,	Mrs. *Whitlock.*
Nurſe,	Mrs. *Shaw.*

In Act the Third,

An EPITHALAMIUM, to be ſung by Mr. *Darley*, Mrs. *Marſhall*, Mrs. *Warrell*, Mr. *Reinagle* and Miſs *Broadhurſt*.

After the Play, A HORNPIPE by Mr. *Francis*.

To which will be added, A COMEDY, in Two Acts, called,

WHO's THE DUPE.

Doiley,	Mr. *Morris.*
Sandford,	Mr. *Moreton.*
Grainger,	Mr. *Cleveland.*
Gradus,	Mr. *Harwood.*
Miſs Doiley,	Mrs. *Francis.*
Charlotte,	Mrs. *Marſhall.*

BOXES to be taken of Mr. B. Whetcroft.

BOX TICKETS, One Dollar----PIT TICKETS, Three Quarters of a Dollar----To be had alſo of M
BRATON WHETCROFT.

*** Doors to be opened at five o'Clock. Curtain to riſe preciſely at ſix.

Courtesy Mr. P. H. Magruder

OLD PLAY BILL, ANNAPOLIS THEATER

A Walk Through Annapolis *in* Bygone Days

Unrecorded Incidents in the Life of Old Annapolis at the Period, and as it Was, When the Naval School was Founded in 1845

By P. H. MAGRUDER, *Secretary, U. S. Naval Academy*

Of those who in the dust do dwell,
May there kindly mention be,
When the birds that build in the branches tell,
Of the planting of the tree.

WHERE is yesterday? Much of it is lost forever—faded away and obliterated beyond any possible recall. Within its hours runs only the smallest recorded certainty of other days because no note was ever made to recall the many interesting and valuable facts and incidents to be appreciated, cherished, and passed on to other generations.

In this age of bustle, rush, and selfishness, one seems to hear the echo of the curt response to the title of this article: "What matters?"—"Who cares?"; and it is to be regretted that with many today the Past is oblivion, the Present a whirl, and the Future a doubt. They care for little but their own small environment; they come and they go, leaving the world and their followers none the better for their brief existence.

These few reminiscences, however, are not intended for them, but for those who are interested in matters more historic and less temporal—for such as cherish the memory of those other days which in a greater or less degree have "left their footprints on the sands of time," and made the world better for their existence.

The host of people associated with the Naval Academy and Annapolis of the present day will be interested to draw a comparison and wander "in thought" with its early traditions and intimate associations of other days, in the words of one who lived at the time and saw its gradual growth and expansion almost to the present.

The author of this article found among the papers of his father, the late John Read Magruder, the unpublished manuscript which follows. Mr. Magruder had been requested many times during his long life to prepare such an article for historical reasons, but apparently was not persuaded until the closing days of his life, about the year 1905, during Governor Warfield's administration. Mr. Magruder was a lifelong resident of Annapolis, from the date of his birth, October 2, 1829, to March 28, 1916. During this long span he was prominently and intimately connected with all phases of the life, incidents, and facts recalled.

As the manuscript of Mr. Magruder's article given below was found in its original form, with no opportunity on his part to make a revision, it is hoped that any errors of diction or expression may be overlooked. The facts presented can be relied upon as being correct.

* * * * * * * *

Will you walk around with me in thought while I call attention to some of the relics of interest which the ravages of time, fire, and vandalism have spared to us?

We will start at the old Carroll mansion,

the residence of Charles Carroll of Carrollton. The part of the old home not demolished is in the rear and can be seen from the creek and bridge. The property is now owned and occupied by the Redemptorist Order for their church, college, and schools. I fancy it would have gladdened the heart of that old patriot to know that his old haunts were to be diverted to such holy and useful purposes. After Mr. Carroll removed to Baltimore an uncle of mine occupied it for many years. It was one of the delights of my early boyhood to wander through the beautiful grounds, fish over the sea wall, and enjoy the fruit, flowers, and trees planted by Mr. Carroll.

Just adjoining its grounds is the old Scott colonial mansion where Francis Scott Key, the author of the "Star Spangled Banner," lived with his uncle while attending St. John's College. Since the beautiful story of Winston Churchill was written it has been pointed out to strangers as the "Richard Carvel" house. It is now occupied by the Sisters of Notre Dame, whose lovely and devoted lives add interest to the history of the old building, which has stood the storms of centuries. It looks as if it would take more than the ravages of time to destroy its beauty, although its antiquity of appearance has been somewhat marred by a heavy coat of paint said to have been necessary to prevent moisture penetrating its walls.

Just across Duke of Gloucester Street from the Carroll property is the stately old Ridout residence which, with the block of three residences for his three children adjoining, was built in colonial times by the John Ridout who owned White Hall after the departure of Governor Sharpe, whose confidential friend and secretary he was. In these busy and changing times this house enjoys the interesting distinction of having been owned and occupied uninterruptedly by the family whose ancestor built it.

Farther up the street is the site and foundation of the old Ball or Assembly Room which, from early colonial times down to the Civil War, was the scene of many gay dances in which all the dignitaries and beauties of those many years took part. (I won't insult them by calling them "the four hundred.") Its springy floor was the delight of many a gay couple. Washington and Lafayette honored by their presence entertainments there. It was occupied as a guardhouse during the Civil War and was almost entirely destroyed by fire. It was rebuilt in the best manner that Annapolis could at that time afford with her slender resources, on the old foundation which connects it with its interesting past history. Mr. Ridgely mentions a portrait of one of the Lords Baltimore and several other governors. These are all owned by the city of Annapolis and are now hanging on the walls of the executive office. I have suggested that it would be a graceful act for the city authorities to present them to the state for the portrait gallery of distinguished Marylanders which Governor Warfield has proposed and begun to gather in the old Senate Chamber and other rooms. It is history that, besides the portraits mentioned by Mr. Ridgely, there was a splendid portrait of Cecilius Calvert, Lord Baltimore, first proprietary governor of Maryland. This is still in existence and is owned by the Peale family. A picture and a portrait of Queen Anne have disappeared. Both of these were given by Queen Anne to the city.

Just below here are the remains of what was, until very recent years, an old gambling den. It was occupied regularly every session of the legislature by a gambling crowd. Its princely suppers and the large sums won and *lost* by grave counsellors, legislators, and even by governors and judges, are among the traditions of Annapolis, some of them very sad and pathetic, detailing ruined lives and fortunes, some equaling those told of Saratoga, Monte Carlo, or Baden-Baden.

Just across the street is the First Presbyterian Church. It is not colonial but there are two interesting facts connected with it. It was erected upon the foundation of the second or third theater built in Annapolis and it was built of the brick of the large stable and coach house of the Lloyd mansion which, when I first recollect, was on the corner of Maryland Avenue and Prince George Street. For both these facts there are interesting precedents, for in the last century, after the terrible holocaust of a Richmond theater, a church was erected on its ruins and still stands. Was not the cradle of the Saviour of the world the manger in a stable?

I would like, as we pass along, to notice the Dulany, Pinkney, Harwood, Green, and Wells mansions, all fine old specimens of colonial architecture, but it makes my article too long. They are worthy of a more extended notice for their many points of interest. Walking on, we come to the Hotel Maryland, made by adding to what in my boyhood days was known as the "Bowie House." It was a grand old structure; like nothing else I have ever seen. Two old gentlemen were walking together when one said to the other, "Was there ever such an odd-looking structure as that?" "Yes," said the other, "on Thread and Needle Street in London there is one just like it." Now I don't vouch for this; I only give it as I heard it.

Next, St. Anne's Church, the third on the same foundation. The one which this succeeded was destroyed by fire in 1858. There are many of us still living who remember the fine old structure whose destruction was one of the many heavy losses which Annapolis has suffered from the same cause. To Annapolitans it was a sad sight, associated as it was with so much near and dear to them. The old bell—the gift of Queen Anne—which for more than a century had tolled in sweet, solemn tones at the funerals of our loved ones, tolled out its last and own sad requiem on that black winter night. Its curfew, or rather nine o'clock bell, had been rung by old Joe Mog and his successors all those years, but here was a fire not to be covered—it would not out. A beautiful and much admired marble statue in the vestibule in memory of one of the Dulany family looked very noble in woe in the midst of the burning. It seemed almost as if a human sacrifice were being offered. It was a scene never to be forgotten. The next evening the congregation and other citizens assembled in the court house and while the fire was still burning, steps were taken for rebuilding. In a short while the present structure rose out of its ashes. A gentleman of much culture and travel told me that he had seen most of the churches at home and abroad, many of them of course far grander and of more architectural pretension, but he had never seen one that impressed him more with its beautiful appropriateness.

We now pass on to the old site of the once famous and handsome home of Mrs. Green, used as a boarding house in later years, which was located on Church Circle, on the grounds of the present executive mansion, but which was torn down at the time of the construction of the new mansion. It was similar in design and construction to the old Pinkney House just opposite on the site of the present Court of Appeals Building. This old house was celebrated in about 1845 as the living quarters of the board of examiners, consisting of high-ranking naval officers, who conducted the examination of a large class of midshipmen spoken of at the time as the "Class of 1840." The meeting of this board was a great event. The examination and studies of the midshipmen were going on for a long time. There were never many of them here at one time and they were known as the "oldsters," and it was several years before their final status and relative rank were determined. There were but one or two houses in those days where dignitaries could be publicly entertained, so, as above noted, this house became the temporary home of the high-ranking officers of this board. Their march to the school in the morning was quite a show. These old officers and their wives were great sticklers for rank, as are some of their successors of the present day. On one occasion this grand procession was coming up the street when a small boy called out, "Here comes the commodores." The wife of the ranking officer, a grand and important personage, said in a loud voice, "No, my little fellow, only Commodore S. and the captains."

Now we come to old St. John's College. If we consider it as the successor of the King William School founded by Sir Francis Nicholson, which it really is, it ranks next to Harvard as the oldest collegiate institution in the country; but even disallow that claim and it is the third in point of seniority. The fine old structure in the center of the group is McDowell Hall, commenced by Governor Bladen as a colonial residence and known as "Bladen's Folly." A host of distinguished men in every walk of life have gone forth from its walls—probably more and of more ability in proportion to their numbers than from any other institution in the country. They have filled every walk of life and filled them most honorably. On the grounds of the

college, during the Revolution, French and American soldiers were encamped and quite a number of them were buried there. The patriotic societies took up the matter of a monument to the French soldiers and during the ceremonies connected with reinterment of Paul Jones, the base of the monument was laid with most impressive services in which the French ambassador, an admiral, and other distinguished Frenchmen, as well as our own governor and others, took part. It was a most touching and beautiful ceremony. It seemed to be an appropriate recognition or response to the interest which France took not only in our "First Admiral" but in our whole struggle for liberty. Why should not our own brave soldiers buried there have a monument also to mark their resting place?

During the Civil War the same grounds served for the encampment of thousands of our soldiers. I remember going out one morning after a severe storm. The campus in front of the college was covered with tents occupied by soldiers. This storm broke off a large part of the "Old Poplar"—a tree which I suppose has not its equal on this side the Rockies—and crushed in numbers of tents, but, providentially, injured no one. None of the buildings compare in antiquity with McDowell Hall, although some of them are quite ancient.

Down Prince George Street we come to what was the residence of Sir Francis Nicholson, the first colonial governor after the removal of the seat of government from St. Mary's to Annapolis. In after years it was altered and enlarged by Judge Hagner. It has changed hands several times and is now the residence of Mr. Marchand, but this historic interest attached to it can never be obliterated.

Near by is the former home of Paca, one of the "signers." It has been altered and enlarged into a hotel and is now known as Carvel Hall. In close proximity are the Jennings and Brice houses and one of the Chase mansions, of which, if space allowed, much of interest might be told.

The Lloyd house, now known as the Chase home, the Hammond or Harwood house, and the mansion of Governor Ogle, now owned by Mrs. Porter, all in close proximity, are fine specimens of colonial architecture. The Lloyd house differs from most colonial buildings in that it is a three-story building. The tradition is that it was originally intended to be only two stories but that after Mr. Hammond built his house opposite it, the view of the bay and river was shut out. Governor Lloyd then added another story that he might have an unobstructed view of his vessels as they came and went to and from his Wye home and even from across the water. The historic Peggy Stewart mansion is near by but so much has been said and written about it that I shall be touching upon historic records if I write of it, which I said at the outset I did not intend to do. Now come with me to "Acton on the Spa," now owned by Pay Director Murray. It is a fine old colonial building and has been in the possession of the present owner's family for two generations or more. There is a pathetic story in connection with a former owner which I will relate. He was Colonel (Lewis, I think) Duvall. His estate embraced many broad acres reaching far down toward South River. For many years he represented Annapolis in the general assembly. One year he decided not to be a candidate but after another candidate had been named as his successor he changed his mind and went before the people for reëlection. He opened his orchards and gardens to the public and spent his money recklessly and lavishly, but was defeated. The enormous expense ruined him financially. He was compelled to sell all his ownings but a small farm and house to which he retired, broken-hearted and ruined. He left a large family of sons and daughters, the last survivor of whom was Dr. Marius Duvall, a prominent surgeon of the Navy.

I have left the State House for the last to be noticed in our walk. It has always been the pride of Maryland and much admired. During the celebration of the one hundredth anniversary of the Battle of Yorktown and surrender of Cornwallis, in which Germany and France took a conspicuous part, one of the French commissioners, M. Regeme, the superintendent of public instruction in the French cabinet, came to Annapolis. On his way from our house to the Naval Academy, where he was staying, we passed up Francis Street (just where we are supposed to be now). In front of the State House he stopped and

said, "I have not seen a building in America that pleases me as much as this. Will you pardon me if I pause and make a little sketch of it?" And there in the beautiful moonlight he made his sketch.

The years of the life of this old building are replete with incidents and events of national and state historic interest, but they are matters of record and I am dealing only in personal reminiscences and traditions. If these old walls had graphophonic power what stories they could tell. I shall have to pass them by, but there are events which have taken place within its walls there within my memory which are certainly of historic interest and to which I will briefly refer. In 1850, shortly after the death of President Taylor, and when the compromise measures of 1850 were being considered, Governor Pratt, then senator, entertained at Ogle house, his home, Henry Clay and a half dozen or more distinguished senators. They were received in the old Senate Chamber on the part of the state by the governor and on the part of the city by the mayor, Dr. Abram Claude (father of our present mayor), then quite a young man, in a few eloquent and well-chosen words. Then Clay, with the impassioned eloquence which was his own, spoke of the inspiration to be drawn from the place where they stood. It was a scene not to be forgotten, and equal in dramatic interest was another on the same spot in which Daniel Webster, Louis Kossuth, the great Hungarian soldier and statesman-patriot, and young and eloquent Governor Lowe, were the chief actors. Liberty and patriotism were the theme of all the eloquent talk.

I must relate two incidents of striking interest which I remember and which occurred in the old Hall of Delegates just across the rotunda. The first was the examination of the charges brought by ex-Governor Francis Thomas against Judge John C. LeGrand. Mr. Riley mentions it but places it as occurring during Governor Thomas' administration. In this he was mistaken. It was remarkable because of the distinguished and able men connected with it. The pathetic and feeling story of the venerable Governor McDowell of Virginia, as he indignantly repelled the vile charges and insinuations made against his lovely daughter, the wife of Governor Thomas, who had been obliged to seek the protection of her father's house, brought tears to the eyes of some of the audience, and when Thomas, stung and galled by his burning words, rose and in furious and withering tones said he had been denounced and slandered by these hounds of hell but that he defied them all from "Bully Benton down to Blackguard McDowell," the gavel of the speaker (John P. Kennedy) quickly descended with a call to order, and there was a pause. It was almost a parallel to the Patrick Henry scene in the House of Burgesses of Virginia. The charges against Judge LeGrand failed signally. Soon after, he was elected chief justice, which position he held until his untimely death. He was one of the most brilliant young men of his day.

The other scene to which I shall allude occurred during the sessions of that noble Maryland judge, William B. Carmichael, the head of the session of the Constitutional Convention of 1867. President Andrew Johnson and Secretary of State Seward visited Annapolis as guests of Governor Swann and were tendered a reception by the convention, and there on the same platform stood three men, each of whom had been victims of violence and cruelty and injustice in different forms, from which they had barely escaped. Judge Carmichael was dragged from the bench by the Federal soldiery and sustained much bodily injury, and in his person the civil law was trampled under foot. Seward barely escaped with his life the knife of the assassin and bore to his grave the terrible scars and disfigurements of the cruel blade. The country was only saved from the humiliation and disgrace and injustice of a conviction for treason of its Chief Magistrate at the hands of a fanatical and revengeful Congress by the bravery and independence of Fessenden, Graves, and the few who had courage and sense of justice to stand out against the fury and malignity of their party. It was a happy omen of the future to see men who had differed so widely and had all suffered so much for their opinions standing there on one platform, if not entirely in friendly accord.

* * * * * * *

Out of respect to other days of old Annapolis and the Naval Academy and for the interest of other generations, it is to

be regretted that the above-quoted article was not continued, as it was probably the author's intention to touch on other interesting incidents revealed to him from an earlier generation, and other facts occurring during his long life; and for that reason the writer of this article feels it may be of value to record a few facts, generally unknown, which the author's father recounted to him from time to time.

It is not generally known that Commodore Perry's celebrated expedition to Japan sailed direct from Annapolis in November, 1852, and that just before sailing President Fillmore and the Secretary of the Navy visited the ships here and were entertained at a memorable party. The ships returned to Annapolis afterwards, but did not come directly here. My father saw the squadron sail and witnessed the return. It brought back at the time the Japanese bell, now located in the grounds, which was presented to the Naval Academy in 1858.

Another generation passed on to him the fact that many years ago Annapolis harbor was landlocked, Greenbury Point and Horn Point projecting so as to make a direct view of the entrance impossible from a distance. To show how rapid the disappearance of Greenbury Point by erosion has been in recent years, when the writer was a boy the old lighthouse on the point was far enough back to have a small corn field in front of it. A few years ago when passing around the point at low tide, the writer came upon the remains of the old brick and stone foundations of the lighthouse over two hundred feet to the eastward of the point. So it is very probable that it could not have been so many, many years ago that the above conditions existed.

It is not generally known in this generation that Dom Pedro II, the last Emperor of Brazil, visited the Naval Academy in 1875, some years before his banishment.

It is an interesting fact that the location of the burned wreck of the *Peggy Stewart* was known for many years. The late Mr. E. S. Riley, author and historian of Annapolis, knew of its exact location, and during the dredging of the Naval Academy in 1903 Mr. Riley watched with interest for many days the approach of the dredge to the supposed location, and, sure enough, at the traditional position large pieces of the charred remains of a ship of the construction of that period were brought to the surface, as well as partly burned oak with wooden trenails. The writer has a piece of this old wreck now in his possession, presented to his father by Mr. Riley.

The old Chesapeake and Ohio Canal, as originally planned, was designed to come into the Severn River instead of the Potomac. A compromise was made in appropriating for this project which gave to Annapolis, instead, the old steam railroad from Elkridge which the Annapolis citizens desired.

This generation can hardly realize that there was a large shipyard at the corner of Northwest Street and Calvert Street in the early days of Annapolis, where large ships were constructed for the overseas trade. This location is now a great distance from the waters of College Creek. The cove to its approach has been entirely reclaimed. Tradition recalls that in the early days there was a wharf at the corner of Main Street and Conduit Street. Some years ago when the writer was a boy, at the time that deep excavations were being made at this point, he personally saw the piling and the cross pieces of this old wharf comparatively well preserved.

It is interesting to recall that in the center of the block bounded by Hanover Street, Maryland Avenue, King George Street, and the Naval Academy grounds, there stood from early times a handsome colonial brick house of fine proportions owned by the Lloyds and said to have been equal to any in the town at that period. It was burned in the early forties. The remains of the old dairy house which was near the mansion are still in existence at this location.

The writer's father was told by his mother many of the striking events of the War of 1812. In this connection it is interesting to note an incident described by one who actually saw the British fleet in 1814. In 1888 the writer was informed by his grandmother, who died in 1889 in her ninetieth year, that when she was a young girl she was taken to Horn Point and personally saw the British fleet of "seventy-two sail," as expressed in those days, pass Annapolis on its way to Baltimore to bombard Fort McHenry.

It may be of interest to recall that in the early days of Annapolis there stood a quaint old house near the southeast corner of Maryland Avenue. This house was

so quaint and celebrated that it attracted the attention of all visitors. It was known as the "Old Shakespeare House," and was said to be a replica of Shakespeare's house in England. It was demolished about 1850.

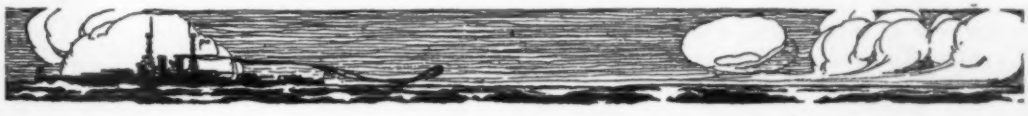
Some of the older people of Annapolis informed the writer's father that General Washington during his many visits to Annapolis was greatly impressed with the fact that nearly all the streets of Annapolis radiated from circles and squares, and was so much taken with it that when he was planning the city of Washington he sent the engineer, Major Pierre Charles L'Enfant, to Annapolis to study the layout with a view of applying it to the proposed city. L'Enfant made two visits to Annapolis for this purpose. This may be the reason why so many of the avenues and streets of Washington radiate in the same manner.

There once stood within the present bounds of the Naval Academy two historic buildings now lost from sight by the vandals of destruction—one the old Governor's Mansion, occupied by the governors of Maryland from 1769 to 1868, which was ceded to the government by the state for the enlargement of the Naval Academy at the time. It was a fine old specimen of colonial architecture, and was used for many years afterwards as the superintendent's office and library. In the construction of the new Naval Academy it was intended to preserve this mansion for the superintendent's quarters and plans were made with this in view. The architect discouraged it as it in some way interfered with his general plan, and he finally had this fine old mansion condemned, as he reported the walls were too weak and would not stand the proposed internal remodeling. This splendid building stood on Buchanan Road just opposite the present superintendent's quarters, and was demolished in about 1902. The other historic house noted above was the old Nicholson home near the site of the present band stand and Lovers' Lane, made famous by its association with the original manuscript of the "Star-Spangled Banner" and other incidents. On the death of Judge Joseph Hopper Nicholson this property passed to his widow, the sister of the wife of Francis Scott Key, and his son, Colonel Joseph H. Nicholson, who deeded it to the government in 1845 for the site of the Naval Academy. It is unfortunate that these old structures could not have been preserved for future generations.

It is refreshing to know that in these days there remain a few fine old specimens of the past which have escaped the vandals, and it is a pleasure to note here, among the others previously mentioned, now standing, the old Reynold's Tavern, built in 1737, and famous in its day. It is now owned by the Farmers' National Bank and occupied by its president. It has been carefully preserved and is in fine condition, and remains much as it was as in its colonial days.

There is yet another remnant of the past in sad contrast to its former early brightness —the old Randall House, the ancestral home of the present Randall family of Annapolis, situated on the north corner of Randall Street and Market Space. This old colonial brick house, celebrated in its day, and with its beautiful gardens, box bushes, and sloping lawns to the water, is pathetic today in hideous surroundings, as compared with its picturesque and peaceful setting of the colonial period. This house was the boyhood home of the late John Read Magruder, the author of the leading part of this article, who inspired this "walk in thought" through old Annapolis.

There are many other interesting, unrecorded, and not generally known incidents in connection with old Annapolis and the old Naval Academy that could be noted here, but space forbids. The few noted above may prove interesting, and may thus not be entirely lost to future generations.



Frozen Toes *but not* Cold Feet

By Lieutenant Commander George E. Brandt, *U. S. Navy (Retired)*

IMAGINE putting in three days of Arctic night cutting off your own toes! From the frozen north there comes the attention-arresting story of trapper J. Omera who, though lacking surgical education and experience, was nevertheless forced by circumstances to amputate four of his own toes. While inspecting his trap lines in winter weather 60° below zero, Omera suffered frost bite in the toes of his right foot. After a few days in his isolated cabin, removed by more than fifty miles from the nearest human being, he noticed that infection had set in and decided that amputation was necessary.

We see him set about his surgery in a thoroughly business-like manner, taking care to sterilize with boiling water his entire outfit of instruments, which consisted of one kitchen knife. For three days he worked.

Eminent specialists of the medical profession undoubtedly can name a long list of complications which might result as after effects of such an unscientific operating procedure. One given to statistical and mathematical processes might even calculate the chances of the patient's developing any one of a number of unpronounceable ills and perhaps leave him with only the tiny fraction of a single chance for complete recovery.

Yet, strange to relate, the tiny fraction won against heavy odds. Recently, on his return to civilization, Omera submitted to professional examination and was told that the operation was an entire success and that no further treatment was needed.

The story of Omera recalls the surgery of the old whaling days when it was no unusual thing for the captains of whaling vessels to do amputations of this kind.

Should we want to know more about this unexpected side of these hardy mariners, what is more natural than to turn to the records of the Coast Guard cutter *Bear*, that gallant ship which so often braved the ice of the frozen north and in both summer and winter carried hope and succor to freezing and starving whalers.

Through the courtesy of Admiral F. C. Billard, Commandant of the Coast Guard, I examined a surgical report made thirty years ago to the *Bear* by Captain George B. Leavitt of the whaler *Newport*.

It came about that at Point Barrow, the northernmost tip of Alaska, Surgeon S. J. Call of the *Bear* saw an Esquimo boy who had been operated on by Captain Leavitt. The surgeon was astonished at what he considered a remarkably successful outcome. Surgeon Call got in touch with Captain Leavitt and persuaded him to make the report from which we catch a glimpse of what was probably the most northern American operating establishment.

Fortunately Captain Leavitt happened to be one of those careful mariners who kept an accurate log. He committed to writing all that was interesting or instructive in his experience.

The first operation mentioned was the amputation of half the right foot of a man belonging to the *Mary D. Hume* in March, 1891.

How that table was scrubbed with sand and canvas, then washed with lye! Then the patient was placed on the table and wrapped well in blankets. To give additional warmth in that terribly cold room, whiskey bottles were filled with boiling water and wrapped with towels.

Speaking of this first operation, the captain says, "Putting the patient under the influence of chloroform was a slow process because it was entirely out of our line." Not one of the operators had had any previous experience with chloroform or had ever seen it used.

The report continues: "We placed the

bottle under the man's nose, and after he had taken a whiff we would ask him if he was sleepy. This was continued for half an hour without any effect; he still showed a bright light."

The consultations and discussions with suggestions and arguments waxed strong and were conducted in the presence of the patient, stretched out on the mess table in the officer's quarters, "all shipshape as a schooner in drydock." Professional jargon, so incomprehensible to the layman, being unknown to the company, they were forced by necessity to conduct the proceedings in that vernacular peculiar to the sea. Somebody recalled the case of a sailor on the China coast who committed suicide with chloroform by saturating a handful of rags with the liquid, then placing them over his face. This story furnished the basis for discussion because it was all that was known by these men about the use and effects of chloroform.

"Let's try that system," said Captain Tilton. "We've got to stop this backing and filling and get squared away."

Protests and mumblings from the patient, who seemed to lack enjoyment in his unusual position of prominence.

Seeing that the discussion was getting on the patient's nerves, and, fearing that if further pursued in his presence it might have the effect of dispelling that confidence in the surgeons which it is so desirable to retain in the mind of one who is about to be operated on, the conferees retired to the mate's room and closed the door while they completed their plan. Down went the cook to the engine room to fetch a handful of waste.

"Then," continues Captain Leavitt, "we made a paper cone, put in some waste saturated with chloroform, slapped it over the man's face, like a thrummed collision mat over a hole in the side of a ship. He went right off." There was no doubt of his being "off" because all swearing and protesting had stopped.

Meanwhile the cook had sterilized the surgical instruments by boiling them in the galley. They were brought in still in the pan of hot water. Their instruments consisted of two pieces. Simplicity and directness, basic elements of a seaman's character, marked the common-sense preparations. One instrument was a butcher knife, sharpened until its edge was keen as a razor. The remainder of the outfit consisted of a hack saw that had done duty in the engine room and the stoke hole.

There were no "scrubbed" nurses with gauze over their heads and masks over their faces, to hunt down and destroy all bacteria. There were no autoclaves, nor steam-pressure sterilizers, nor digesters, nor rubber gloves.

Captain Tilton bossed the job. And a right good boss he was. If there were microbes in the operating room there was discipline also. The "seaman's eye" compensated in a measure for the lack of anatomical knowledge. The skilled surgeon may be likened to a navigator sailing over well-known waters after carefully memorizing the chart. Captain Tilton and his assistants sailed into what was to them unknown regions. Bold Columbuses!

They whose hands had wielded the palm and needle in sewing a thousand sails, some of them wet and many of them frozen, found sewing up the wound "something in our line" which presented no difficulties whatever.

"It was," runs the narrative, "a cut square across the foot. After the cutting, the edges were drawn together as far as they would come and gauze, well greased, placed over the cut, followed by absorbent cotton saturated with Friar's balsam. After four days the bandages were removed and fresh ones put on in the same manner. For a wash we used carbolic acid. It turned out well, but the bone the big toe moors to was a long time healing."

Confidence and improved technique came to these surgical seamen with experience. The same month they amputated two large toes and three fingers; Tilton, head surgeon, and Leavitt and Bodfish, assistants. In the course of time we find little refinements introduced and a striving for exactness in detail to produce a shipshape job without loose ends or Irish pendants. It was the ambition to have the wound heal up "as smooth as the side of a racing yacht."

We find in the report:

March 9, 1894—Both feet, or the best part of both feet, were amputated from a man belonging to the *Norwhal*. These feet were taken off well back, the same way as with other amputations, with the difference that after the foot was cut to the bone, a piece of canvas was put on and the flesh hauled back and the bones then cut off.

In this way a flap was formed, and the whole business turned out as neat a job as anybody would want, something that reminded you of a new piece of rigging that had been wormed and parcelled and served.

December 9, 1894—Six fingers and three toes were amputated from a man belonging to the *Thrasher*.

This was the last operation credited to Captain Tilton as boss surgeon. All cases mentioned after this one were bossed by Captain Leavitt with Captains Bodfish, Cook, and McKenna assisting.

On December 28, 1895, Mr. Tilton, the second officer of the *Alexander*, had a finger removed from the right hand.

On February 3, 1896, a finger was amputated from a man belonging to the *Jeannette*.

With increased skill and teamwork the operators were soon able to work with surprising speed. Also, the technique of administering the anaesthetic was so completely mastered that they could regulate the degree to which the patient "went off."

February 17, 1896—Amputated part of one foot from a man belonging to the *Beluga*. From the time this man was put under the influence of chloroform until he came to, only thirty minutes intervened.

How many surgeons who have given a lifetime of study to the art can beat this performance?

My next big contract was taking off the right arm of Mr. West, the third officer of the *Navarch* on June 29, 1896. The arm was amputated a few inches below the shoulder, cleaning off all the burnt flesh. In putting a ligature on the large artery, gut was used. The small veins were touched with caustic. After bandaging the arm, a compress was kept on in case of accident until the ligature was removed. On June 28, I had to make a second operation, this time laying open the whole shoulder, and taking the bone off to within an inch of the joint. Disarticulation, as I understand it, means unjointing. Well, I did not do that, but left, I should say, one inch clear of the joint.

Another case of arm amputation was that of the Esquimo boy who came under the observation of Surgeon Call.

Summing up, Captain Leavitt writes:

Iodoform was the only antiseptic I used in all my surgery. After operations I used cocaine or morphine (whichever I happened to have) to deaden the pain, using from half to a full grain, as was necessary.

All the cases we worked on have turned out well, and some of them better than the case you saw. Chloroform was used in every case without a single bad result.

I have not studied medicine nor done any dissecting, nor had I ever seen anything of the kind done, until I was compelled to do it at Herschel Island.

So ends this extraordinary report. On it Surgeon Call placed the following endorsement: "Their fearlessness and the results are sometimes remarkable, and would call forth the praise of our most expert operators."

It was a fearless breed who manned the whaling ships in those days. Resourcefulness and a more than full measure of common sense and good judgment often saved them from the jaws of death. What confidence the men had in their captains! They would never have submitted to an operation by a "landlubber" of similar inexperience.

Nothing seemed to daunt these men of the sea. Theirs was the spirit of Vasco da Gama, of Captain Cook, of Magellan, and Sir Walter Raleigh. The same spirit in Nelson broke the line at Copenhagen; in Farragut it damned the torpedoes in Mobile Bay; in Peary it conquered the North Pole.

A New Line-*of*-Position Plotter

By HARLAN T. STETSON, *Assistant Professor of Astronomy, Harvard University*

THE importance of line-of-position work in ocean navigation has resulted in the appearance of numerous tables for facilitating the computation and the laying down of the line of position from one or more measured altitudes of the sun or other celestial objects. Whatever method may be employed, whether that of St. Hilaire, Aquino, *H.O.203* tables, or that recently advanced by Lieutenant Commander Weems, a point on the line must first be plotted on a Mercator chart and a line then drawn through this point at right angles to the sun's true bearing. The large charts usually provided for this purpose are cumbersome, and though, of course, universal in their longitude scale, are necessarily limited in their latitude scales. This necessitates carrying a whole series to cover the range in latitudes which may be required, although only a small part of each chart may actually be utilized. The problem of handling and stowing the used and unused charts presents no small difficulty, especially in cramped quarters such as submarines, subchasers, or aircraft. Furthermore the graphical work on the large charts can never be filed with the observational data and therefore the ship's log to this extent contains a missing step in the actual deduction of the required fix.

The plotting board, illustrated herewith, is designed especially to obviate such troubles by providing in a compact kit (twelve inches by fifteen inches by one and one-fourth inches) a universal chart table and a compartment for the storage of the plotting sheets, and the temporary filing of the records until removed to a book or file where they may be permanently preserved with the numerical records.

The plotting sheets, which are printed without scales in either latitude or longitude, are attached to the metal drafting surface by means of hinged clips near the four corners of the board, and the paper preserved in the proper position and orientation by short lugs or dowels nicely fitting perforated holes in the paper.

The longitude scale is etched on a rule constructed similarly to a draftman's T-square, the T-head fitting closely on the left hand edge of the plotting board.

The longitude scale is graduated both in arc and in time. The latter graduation makes possible the plotting of a given longitude in terms of time without the necessity for conversion into the arc equivalent as in the usual procedure.

The necessary latitude scales needed to make the plotting sheets universal are etched on the surface of a rotating cylinder recessed in a compartment at the left side.

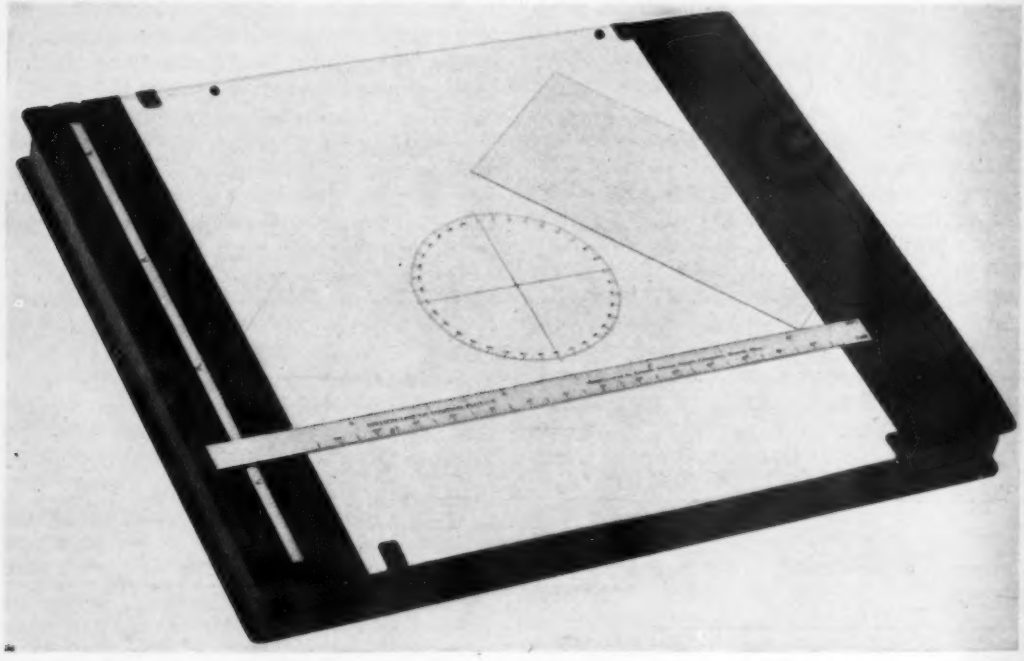
The various latitude scales with which the rotating cylinder is provided are brought into view successively by a slight turn of a knurled knob, conveniently located at the upper left-hand corner of the board.

Only one latitude scale, covering a range of two or three degrees, is visible at any one time. It may be read through a suitable opening adjacent to the left-hand margin of the plotting sheet.

A small cog engages a tooth gear which automatically stops the roller at the proper point and holds it firmly until it is again intentionally turned.

It will be recalled that in the determination of a ship's line of position from an observed altitude of the sun at sea, it is necessary to assume a given latitude and longitude with which, by means of appropriate tables, a line of position can be drawn at right angles to the sun's true bearing or azimuth. In some of the newer methods of navigation, an even degree of latitude for the ship is assumed, and an even degree of altitude of the sun is taken nearest the value observed by the sextant. From computation or the use of appropriate tables, such

as *H.O. 203* and *204*, a longitude corresponding to the assumed latitude and altitude will be found, which gives a point on the circle of equal latitudes, a small portion of which in the vicinity of the ship will appear as a straight line, the line of position or the Sumner Line. The Sumner Line for this position, therefore, will be drawn through this point at right angles to the sun's azimuth, which will be taken directly from the tables. If, as is usually the case, the actual altitude observed by the sextant is greater or less than the assumed altitude, this line of position is moved toward or away from the sun in the direction of the sun's azimuth by as many nautical miles as there are minutes in the difference between the observed altitude and the assumed altitude. The line is moved toward the sun if the observed altitude is greater than the assumed, or away from the sun if the observed altitude is less than the assumed.



For the purpose of laying out quickly and accurately the line of position, there are printed on the plotting sheets a 0°-360° protractor. With the plotting board is provided a rectangular device of celluloid, called the "line locator," on which are ruled two sets of parallel lines spaced at convenient intervals.

The line locator is placed on the plotting sheet in such a way that one of the ruled lines passes through the center of the compass protractor and extends in the direction of the sun's true bearing or azimuth as taken from the tables. The celluloid protractor is then slid along this line until the short edge of the protractor at right angles to the line just described, passes through the point in question. A pencil line is then drawn along this short edge of the celluloid protractor. It is the line of position required, being automatically at right angles to the sun's azimuth. This procedure eliminates the necessity of the numerical computation of the complement of the sun's azimuth before laying down the direction of the line of position, and thus a small source of numerical error is eliminated.

The plotting papers are provided in quantity and are housed within the cabinet contained just below the main surface of the board. Access to this compartment is given by a special spring door on the right-hand edge of the box which is opened by a press of the finger and closes automatically when released. The compartment chamber is sufficiently large to contain the T-square and the celluloid protractor, besides a supply of plotting sheets, and the dividers.

The use of the plotting board in working a practical example in navigation follows.

A ship is known to be in the vicinity of 43° 00′ north latitude, and 61° 07′ west longitude. An altitude of the sun is observed by the sextant from which it is desired to plot the ship's line of position.

Let us assume that the ship is in latitude 43° and that the corresponding longitude from the observed altitude and this latitude has been found by computation or tables to be $4^h\ 06^m\ 10^s$. The sun's azimuth is computed or found from tables to be 130°.

First, we will prepare the plotting board by attaching one of the sheets and label the heads of the three indicated meridians, numbering in degrees from right to left, 60° 61°, 62°. It will be convenient to have the time equivalents for each meridian written on the chart. As this can be marked with the greatest ease, we will label the respective meridians in hours and minutes as indicated, 60° being the equivalent of 4^h, 61°, $4^h\ 04^m$, and 62°, $4^h\ 08^m$. We are now prepared to lay out the line of position. By means of the thumb nut at the left-hand edge of the board, the latitude cylinder is rotated until the region containing 42°, 43°, and 44° is visible. As our longitude is derived directly in "time," we will make use of the lower edge of the T-square containing the time scale for plotting longitudes. Placing the head of the T-square in juxtaposition with the left-hand edge of the plotting board, we set the lower edge of the T-square at 43°. Next we find our longitude corresponding to $4^h\ 06^m\ 10^s$ on the scale of the T-square, and make a pencil dot at the required point. The line of position will now pass through this pencil point at right angles to the sun's azimuth. In drawing the line of position, the celluloid locator is laid over the printed protractor on the plotting sheet so that one of the long ruled lines passes through the central point and the 130° division, and in such a position that the end edge of the celluloid passes through the point just plotted. A line is then ruled along this edge which is the line of position on which the ship may be found. It will be observed that this line of position is effectively drawn at right angles to the sun's true bearing without computation.

It should be noted that if *H.O. 203* (or *204*) is used, the line of postion may be laid down as in the above problem for the nearest degree of latitude and the corresponding longitude found from the tables opposite the nearest degree of the observed altitude, entailing no logarithmic computation whatever. The azimuth given in *H.O. 203* indicates the direction of the sun at right angles to the line of position.

If, as would usually be the case in practice, the observed altitude differs from the assumed altitude, a distance is stepped off toward the sun for an observed altitude greater than the computed altitude or away from the sun if the observed altitude is less than the computed altitude. The distance stepped off in miles is exactly equal to the number of minutes of arc in the difference between the observed and computed altitudes. These amounts would commonly be stepped off with dividers, taking the scale from the latitude scale at the left of the board. Through this point so laid out, a line is drawn at right angles to the sun's azimuth (130° in the above problem) which line will be the required line of position, say for an A.M. sight.

This A.M. line may be carried forward for a run of the ship on any given course by means of the printed protractor and the celluloid device just as would ordinarily be done with parallel rulers. With the A.M. line thus carried forward an intersection may be formed with the noon latitude line or a subsequent P.M. line, in accordance with the usual custom, thus determining the fix of the vessel. Of course an ideal fix is obtained from the simultaneous observation of two or more stars suitably selected.

It is to be remarked that the above procedure in plotting is essentially the same whether a "time sight," Marcq St. Hilaire, *H.O. 203*, or any of the newer methods of navigation are used for determining a point in the ship's line of position. The sheet should be removed from the board as soon as the fix has been determined and a new one substituted. The unused sheets are blocked for convenience in stocks of fifty. The used sheets may be temporarily kept in the receptacle of the apparatus. By making use of the perforations in the top margin, and by folding the sheet once, the used records may be clipped into any standard two-ring binder and become a permanent part of the ship's log.

The Siege *of* Tsingtao

By Lieutenant Emil B. Perry, *U. S. Navy*

ON THE southern coast of the Shantung peninsula, that huge arm that strikes out into the Yellow Sea, is to be found Tsingtao. Variously called "the Riviera of the Far East," "the playground of China," and "the Paradise of the East," Tsingtao—or if you *will* be Asiatic, Chingtao—is indeed one of the most unique and beautiful cities of the Orient.

Situated as it is in the same latitude as San Francisco, Norfolk, and Gibraltar, Tsingtao enjoys all of the climatic changes of our Middle Atlantic states. The Shantung peninsula is famous for its beef, apples, strawberries, peaches, plums, fog, bathing, and peanuts, and of all the cities in Shantung, Tsingtao rates first. Furthermore, Tsingtao is clean. When one speaks of a city in China and calls it *clean*, the last word has been said.

Of course, Tsingtao has had its quota of missionaries. As a matter of fact, it was as a consequence of the murder of two German missionaries that Tsingtao was occupied by German forces in November, 1897. As a result of this occupation, Germany obtained a lease of Tsingtao and the hinterland for a period of ninety-nine years.

In accordance with true German thrift and thoroughness, Tsingtao became orderly and clean; wide streets stretched out, modern hotels and buildings sprang up, and beer gardens and cafés made their appearance; business boomed and Tsingtao was on its way to becoming a little bit of the Old World transplanted to China.

Waterworks and a sewerage system were constructed, forestation was started, sea commerce opened up and buildings which appeared to have been moved bodily from Dresden made their appearance. Tsingtao was happy under the German rule.

When the great conflagration of the World War broke out in 1914, Japan, under the terms of her treaty with Great Britain, demanded of Germany the surrender of Tsingtao; that surrender to be accomplished by September 16, failing which Japan would take action on August 23. The Japanese demand was met by a point-blank refusal, Captain Meyer-Waldeck of the German Navy, and governor of Tsingtao, being instructed to resist its capture to the last.

True to their demands, the Japanese, aided and abetted by British naval forces, besieged Tsingtao—and what a hornet's nest they found.

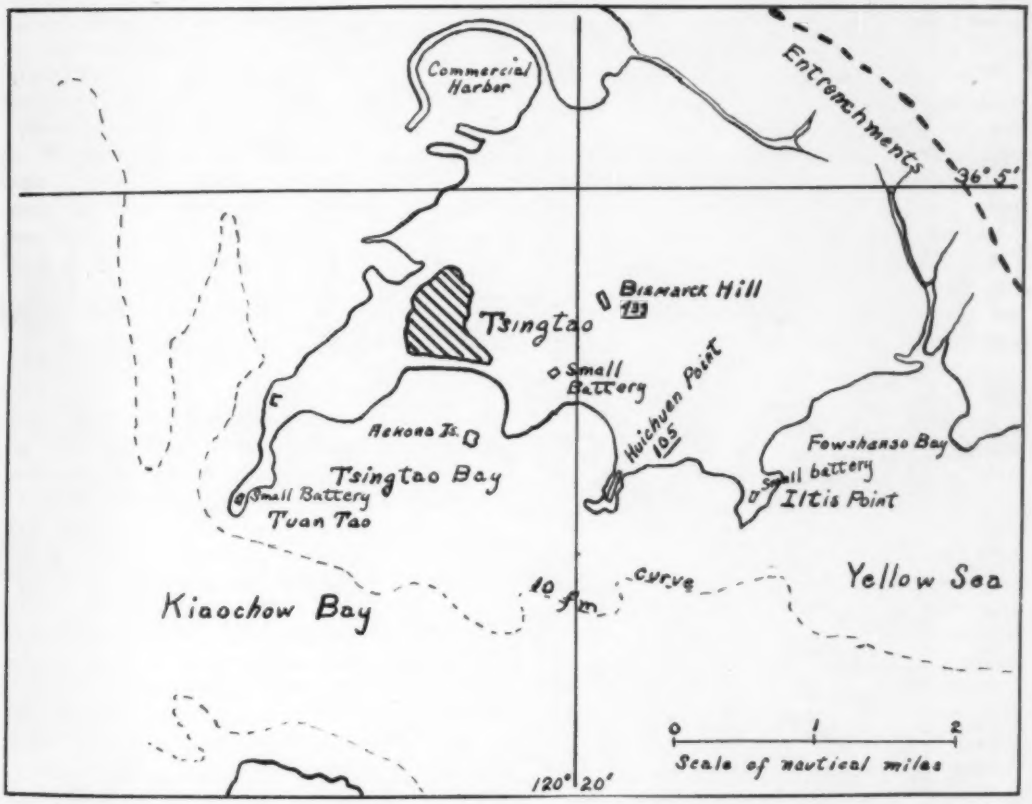
Referring to the plan, it will be seen that the city of Tsingtao is on a small peninsula with Kiaochow Bay to the westward and southward and the Yellow Sea to the eastward. On the northern side, where are indicated the entrenchments, is a low, flat and level plain, bisected by rivers, and extending clear across the promontory. Within this area there are several lofty hills, chief of which is Bismarck Hill, 433 feet above the sea level, in almost the very center and commanding all of Tsingtao, particularly the northern approaches.

Bismarck Hill was well fortified, an immense concrete fort in three sections being let down into the hill top. This fortress mounted four 11-inch howitzers and several smaller guns of about four inches. The fort was complete with an outlook and fire-control station, ammunition hoists and passageways, an immaculate galley, machine shops, and all that goes to make a well-balanced land stronghold.

As a protection against attack from the sea, Huichuen Point was also fortified, and what a fort it proved to be. Built of solid concrete set down into the high point, with disappearing searchlights, and turret guns, it mounted two 9.4-inch and three 6-inch guns, the guns being terraced inland in a line from the point. The concrete work was massive and well reënforced throughout. German thoroughness is shown in its excellent condition today, fourteen years after its surrender.

The entire strength of the German garrison was about five thousand men, these men manning Bismarck Hill, Huichuen Point, the entrenched line, and two small batteries, one on Iltis Point and one in back of the road leading to the bathing beach, each of which is indicated on the plan.

There was also a small naval force based on Tsingtao, consisting of four old gunboats, an antiquated Austrian cruiser and an old destroyer, the *S-90*, all of which were to give excellent accounts of themselves during the siege. The entrance of Kiaochow Bay was mined.



The first offensive action of the siege occurred on August 22, when the British destroyer *Kennet* chased the *S-90* back into the base, with heavy casualties to the *Kennet*. On August 27, Japan formally declared a state of blockade and, with a powerful fleet, laid siege to Tsingtao.

The Allied naval operations consisted of anchoring just out of range of the German guns on Huichuen Point and plugging away at the fort. To lessen the chances of navigational errors, the Japanese laid a line of buoys just outside of the range of the fort, about fifteen thousand yards, and then steamed at will along this line. The idea worked beautifully until one night when the Germans moved the buoys within range of their guns. The next time the Allied fleet started their target practice, they were rudely interrupted when a heavy shell hit the British battleship *Triumph*, killing one man, wounding several, and doing considerable damage. The Allies claimed that the Germans elevated their guns so as to get a greater range and thus were able to overshoot the buoys rather than that they moved them in. If they did, they made a clever job of it.

Having learned the lesson that buoys are liable to shift their positions, the Allied force slightly increased the range and continued the bombardment with but slight damage to the German works. The bombardment did have the effect, however, of rendering movements outside the forts extremely hazardous. It is said that had half

of the Japanese shells exploded upon landing, their effect would have been more pronounced.

The real attack against Tsingtao was delivered by land, the Japanese landing at Lungkow, about one hundred miles north of Tsingtao and wholly in Chinese territory. The violation of Chinese territory did not seem to matter a great deal in those days. When that section of the country had been well cleared out, the main forces landed in Kiukiokow and Laoshan Bays, about fifty and thirty miles north of Tsingtao respectively, and started a slow and costly advance against Bismarck Hill.

The small German naval force, locked in Kiaochow Bay, made plenty of trouble for the Japanese army in its advance, until Japanese aircraft claimed their attention. The Germans soon realized that their vessels were doomed and all of them, except the *S-90,* were scuttled to prevent their capture. The *S-90* attempted a dash to sea, torpedoing the old Japanese cruiser *Takachiho* on the way out. Realizing that capture was inevitable, the crew of the *S-90* ran her aground and wrecked her in Chinese territory.

In early November, having held off the attacking forces for two and one half months, the Germans found themselves running short of ammunition. The Allied force commenced a heavy bombardment using both land and sea guns. Every shell that the Germans fired, even every cartridge, had to find its mark. Fire had to be held to the last desperate moment as there could be no waste.

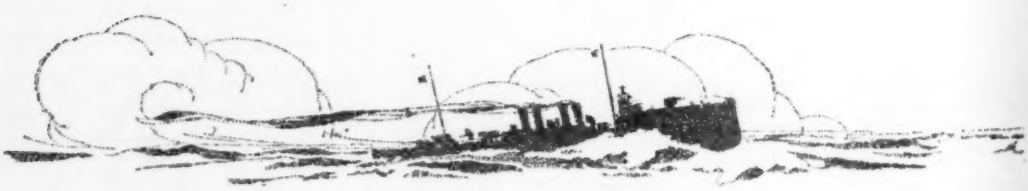
As a last forlorn attempt, a small number of Germans faked an attempted sortie. Of course they were quickly driven back, being chased by thousands of eager Japanese. The trap was baited and as soon as the Japanese had been lured into a gulch, following the fleeing Germans, hell broke loose round about them. Concealed machine guns cut them down by the thousands.

Without ammunition and cut off from all supplies, the Germans, on November 7, found themselves in no position to continue the defense. All gear of any military value was wrecked. Then Meyer-Waldeck surrendered his gallant little command to the Japanese army. It had been a defense by 5,000 men against over 63,000.

With the surrender of Meyer-Waldeck, Japan took over Tsingtao and has held it ever since, President Wilson and his famous points notwithstanding. When Tsingtao was "handed back" to China in December, 1922, it was found that practically all of the actual business property in Tsingtao was Japanese owned. German business men have found it advisable to take Japanese wives. Of a total population of about 72,000, over 18,000 were Japanese subjects. Recent events in and around Tsingtao leave no question as to Japan's interest there.

It is interesting and highly instructive to know that the fort on the sea side—Huichuen Point—had remained formidable right up to the time of surrender and had suffered very little damage from the fire of the ships.

Japan learned a very valuable lesson from the siege of Tsingtao. The valor and skill of the European as opposed to that of the Oriental awakened the Japanese to a new understanding of warfare. Today, years after the war, Japanese officers make pilgrimages to Bismarck Hill and Huichuen Point to see for themselves just how a few German soldiers were able to hold back the might of the Rising Sun for nearly three months.

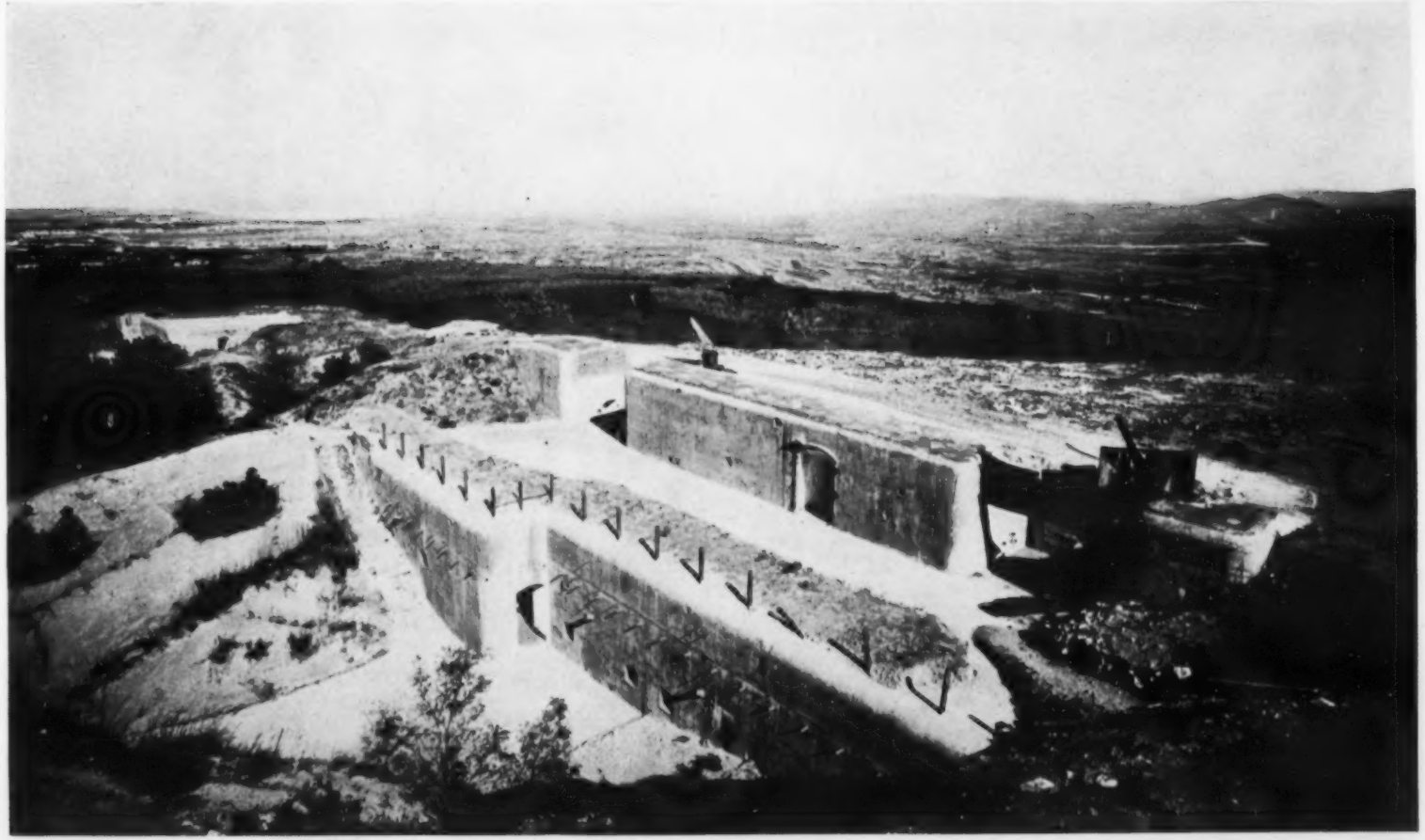


THE SIEGE OF TSINGTAO
Looking from the fort towards the entrance to the bay.

Courtesy Lieutenant E. B. Perry, U. S. Navy

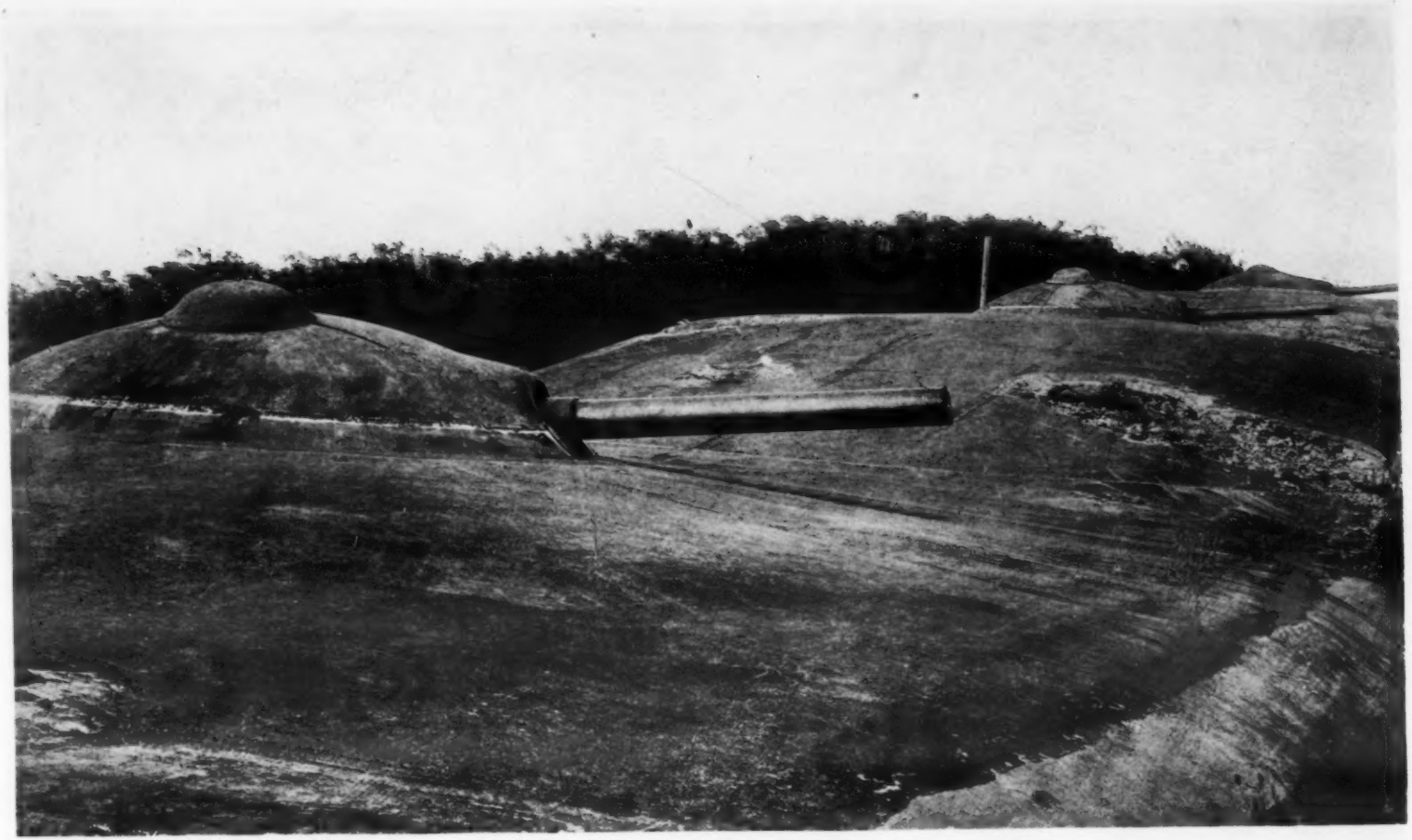
Courtesy Lieutenant E. B. Perry, U. S. Navy

A FORMIDABLE SECTION OF BISMARCK HILL



Courtesy Lieutenant E. B. Perry, U. S. Navy

GENERAL VIEW OF BISMARCK HILL

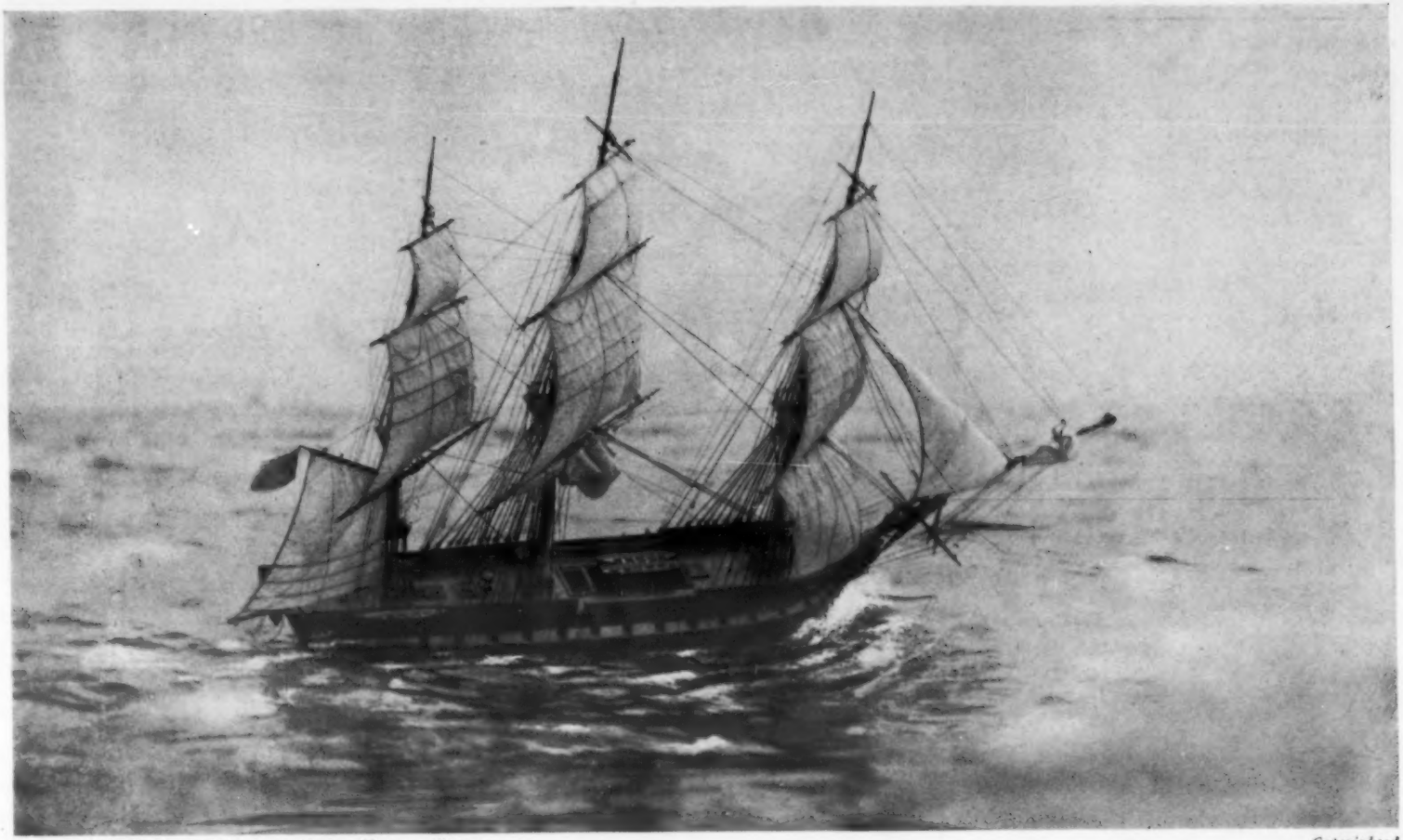


Courtesy Lieutenant E. B. Perry, U. S. Navy

HUICHUEN POINT FORT

Courtesy Professor H. F. Krafft From a painting by Thomas Birch

VIEW OF THE ACTION BETWEEN THE U. S. FRIGATE *CONSTITUTION* AND THE BRITISH SHIPS *LEVANT* AND *CYANE*



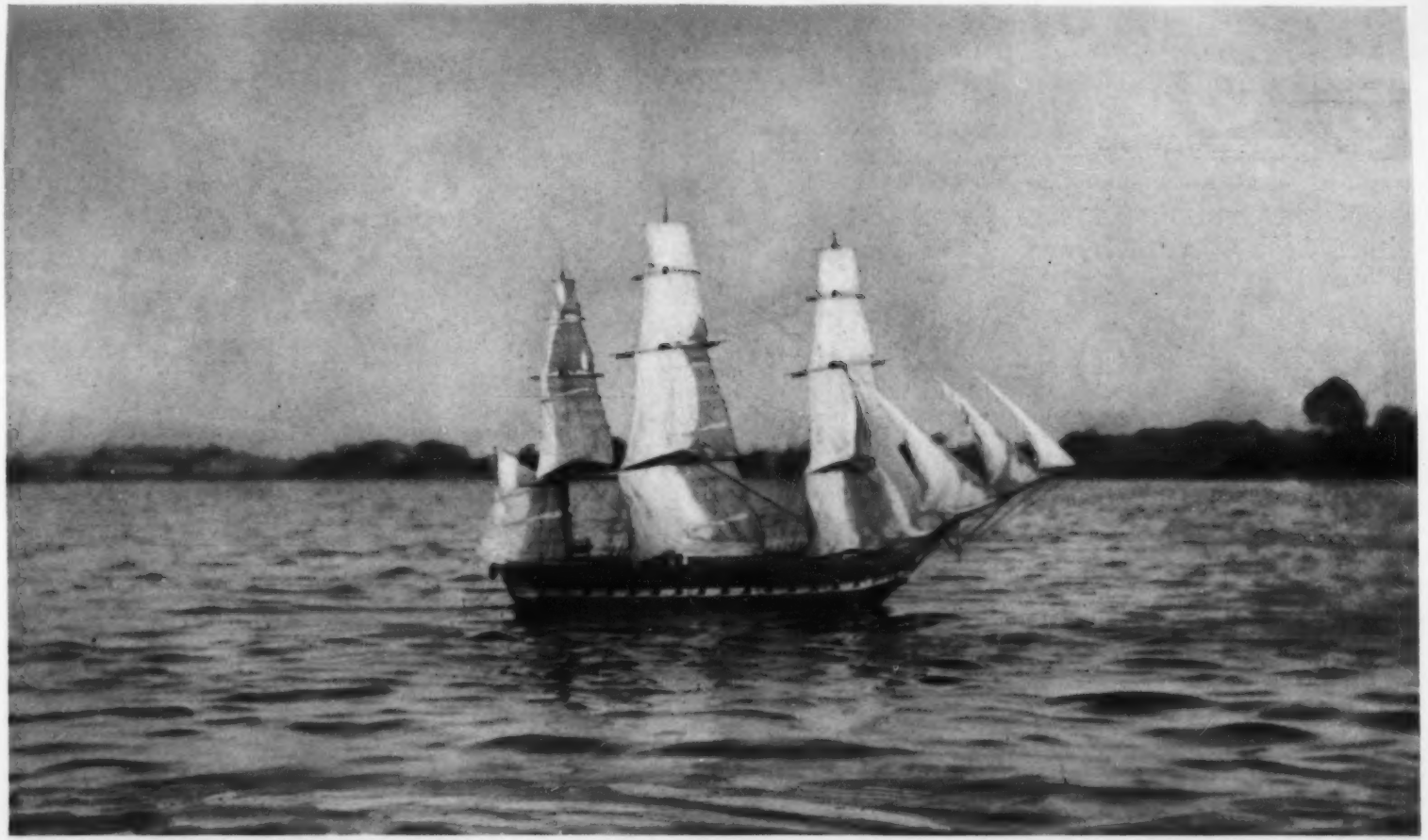
Courtesy Colonel W. F. Spicer and Marine Museum, Boston

Copyrighted

"OLD IRONSIDES" AT SEA

Picture of the model of Colonel Spicer. (See Secretary's Notes.)

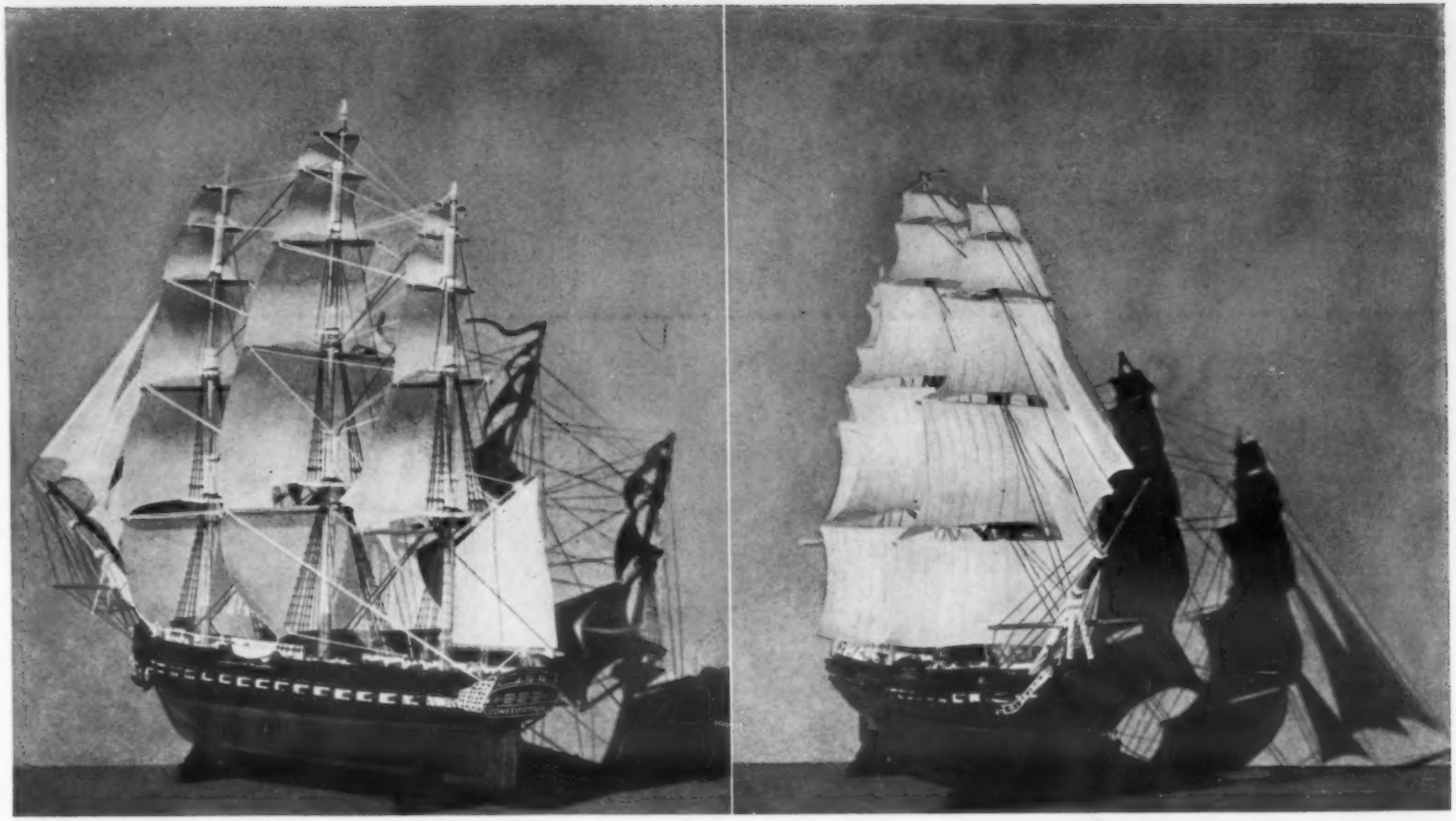
"OLD IRONSIDES" AT SEA
Picture of the model of Colonel Spicer. (See Secretary's Notes.)



Courtesy Colonel W. F. Spicer and Marine Museum, Boston

Copyrighted

"OLD IRONSIDES" CRUISING
Colonel Spicer's model.



Courtesy Lieutenant A. R. McCracken, U. S. Navy

MODEL OF *CONSTITUTION*

This model contains some of the original wood used in building this historic ship. The hull is ten inches long and height is twelve inches. (See Secretary's Notes.)

This model contains some of the original wood used in building this historic ship. The hull is ten inches long and height is twelve inches. (See Secretary's Notes.)

DISCUSSIONS

Commodore Jesse D. Elliott: A Stormy Petrel of the Navy

(See page 773, September, 1928, PROCEEDINGS)

DOROTHY G. WAYMAN—The decapitation of "Andrew Jackson," as described in the September, 1928, issue of the United States Naval Institute PROCEEDINGS, was conceived and executed by men from the old whaling seaport of Falmouth, Massachusetts, and a detailed tradition of the deed still lingers in the old Cape Cod town.

Since it was sketched only lightly in the course of Professor Allan Westcott's article, it may be of future historic interest to set down at this time the complete story as it is recalled in the home town of the actual perpetrator, Samuel Worthington Dewey.

Dewey's father is said to have been a captain in the United States Army, at one time being in command of Fort Independence in Boston Harbor. His wife was a Miss Hallett, belonging to one of the old Pilgrim families of Cape Cod. For what reason Samuel Dewey came to Falmouth can only be conjectured, but in 1809 he was named as a member of the school committee and in 1810 he taught singing school in Falmouth.

An old house on Main Street, at the corner of Gifford Street, had been built in 1790 by a seafaring man of wealth, Captain Timothy Crocker, several of whose sons were noted sea captains. Captain Crocker, however, built this house as a marriage portion for his daughter Susannah, at the time of her wedding to the minister of the Congregational Church, the Reverend Mr. Henry Lincoln.

William and Henry Lincoln, sons of this couple, became ship-merchants in Boston, specializing in the West Indies trade, with an office on the old Central Wharf. It is said that after the death of the Army captain, Dewey, his widow kept a boarding house on School Street, Boston, where William Lincoln boarded on first going to Boston, and thus became friendly with the widow's son, Samuel Worthington Dewey, who at that time was mate of the brig *Delta*, a New Orleans packet. Later, when the Lincolns became prosperous shipowners, Dewey was given command of the brig *Delta*, on a trading voyage to Pernambuco.

One June morning in 1834, when the figurehead of Andrew Jackson had been some three months installed on the *Constitution* by orders of Commodore Jesse D. Elliott, and public indignation was at fever-heat, as described by Professor Westcott, Captain Samuel Worthington Dewey returned to Boston from a voyage to the West Indies in a Lincoln vessel, with a cargo of sugar. Talking with the partners, Henry and William Lincoln, in their counting house, the news of Boston during the captain's voyage was rehearsed and a lively picture of the "desecration of the *Constitution*" was sketched for Dewey's benefit. Dewey remarked that he had a great mind to go over to the navy yard some dark night and cut off "Andrew Jackson's" head. William Lincoln spoke up: "Dewey, if you do that, I'll give you a hundred dollars."

Dewey made a reconnoitering trip and satisfied himself that the exploit was feasible. On the night of July 2, favored by a violent thunderstorm, he rowed himself from Battery Wharf, in a flat-bottomed skiff, to Charlestown, where the *Constitution* was anchored.

He related afterwards that he was lucky enough to find a rope dangling, to which he made fast his skiff, and swarmed up the side, entering a porthole on the gun deck.

Evading the sentries in the dark, he made his way forward to the bridle port under the bowsprit, through which he climbed, and made his way to the spar deck. Here he could see a marine sentry, by the flashes of lightning, and he stated afterwards that the sentry at times was within four feet of him.

Dewey found foothold on the bowsprit, fastened one end of a gimlet by his handkerchief in a buttonhole of his coat, and bored the gimlet into "Jackson's head to serve as a handle."

Drawing out a small saw he attacked the throat of the figurehead. His first incision ran foul of a copper bolt (Westcott says iron but Dewey always called it copper). Commencing again, near the chin, he succeeded in severing the head completely, and by his forethought in mooring it to his buttonhole by the handkerchief and gimlet, did not lose it when it came free.

Again eluding the sentries, he made his way with his booty back to his skiff, which he found almost swamped as he had made it fast, unwittingly, beneath the outlet of the lee scuppers, and the rain had been falling in sheets while he worked. He bailed as quietly as possible, with his hat, cut the skiff loose, and drifted until far enough away to take to his oars without attracting notice. On returning, thoroughly drenched, from this mad-cap expedition, he deposited the wooden head of the President of the United States in the woodshed of his mother's boarding house on School Street, Boston.

When the hue and cry arose next morning on the discovery of the trespass and mutilation of the figurehead, Captain Dewey carried the head through the streets of Boston in a champagne basket to the West End residence of Henry Lincoln, senior partner of Dewey's firm. Several prominent Whig merchants of Boston joined with William Lincoln in making up a subscription of $100, which was paid over to Dewey. The whole business, with the identity of the sawyer, appears to have been an open secret in Boston to everyone but the irate Commodore Elliott.

A dinner was actually given at Concert Hall, Boston, attended by the Lincolns and such well-known Whigs as Parker E. Pierce, at which the head of Andrew Jackson on a silver salver, like that of John the Baptist, formed the chief table decoration. Later the head was the *pièce de résistance* at a banquet at the Astor House in New York, where, according to tradition, Daniel Webster presided as toastmaster; and in Philadelphia Nicholas Biddle is said to have sponsored another feast of jubilation.

Captain Samuel Worthington Dewey accompanied the trophy on its triumphal progress and eventually capped his feat neatly by handing it over to Secretary of the Navy McLane at Washington, where he requested and received a receipt for it as "returned property of the United States."

For many years in a garden on the shore of Lake Mascupie, Tyngsboro, Massachusetts, was to be seen a wooden statue of Andrew Jackson with a deep crack around the throat as though the head had been removed and later bolted back into place. It was the property of Jonathan Bowers, who maintained a pleasure resort called Willowdale. In 1925, after Mr. Bowers' death, his sons held an auction of the property, and at that time, according to a report in the Boston *Transcript* of December 9, 1925, the statue was sold for $10,000 to a Max Williams, acting as agent for a purchaser whose identity was kept a secret.

Whether this is the same statue now on the terrace of Bancroft Hall at Annapolis or whether there are two statues of Andrew Jackson with rival claims to have figured in this incident, are points to be cleared up by more research.

Seagoing Customs

(See page 11, January 19, 1929, PROCEEDINGS)

DR. ING. WLADIMIR V. MENDL.—It was with great pleasure that I read the article of Mrs. Constance Lathrop which explains many of the customs in the life of a sailor. May I, however, be allowed to add a few words based upon my own observation.

Salutes: It is not an exclusive naval custom to place the cap and sword of an officer on the coffin during his burial service. It is just as well the custom in most if not all armies, and even for civilians the top hat is sometimes placed on the coffin, a custom originating, however, probably in the naval-military habit.

There is another custom to be recorded in this respect, one passed even into the regulations of several armies and navies: the salute

to the dead. Any military person meeting a funeral procession in the street is obliged to give a military salute to the dead. This is again a habit which has passed into the civilian life of many a country. In these countries it is an unwritten law that everybody meeting a procession takes off his hat until the hearse has passed.

Starboard and port: It is interesting to note the explanation Mrs. Lathrop gives. In German the designation is *backbord* for *port,* seemingly of no relationship whatsoever, and *steuerbord* for *starboard,* being without any doubt akin. The explanation for both words is the following. The rowing vessels of the early Middle Ages had a rudder in form of a broad oar fixed on starboard, whence the designation *steuerbord—steuer* meaning "rudder." The helmsman stood with his back turned towards the opposite board, whence the designation *backbord.* The same word has passed into other languages too, for instance, *babord* in French, and *babor* in Spanish.

Flag salute: The custom of the salute to the flag, when the colors are hoisted or hauled down, is not exclusively an American one, as one may perhaps understand from Mrs. Lathrop's article. The salute to the flag is a custom of all the navies of the world and in some instances I have found that even lady visitors have been, very politely of course, requested to rise from their seat during the hauling down of the colors.

Pennants: The homeward-bound pennant is not a custom of the English-speaking navies only, but is worldwide. Probably it has been taken over from the Royal Navy or the United States Navy. But there is another custom in Germany deriving from it, worthy of being recorded. In this country the ends of the cap ribbons hang down the necks of the sailors. Now when a sailor is going back home after he has finished his service in the navy, he wears a cap ribbon, the ends of which hang down to his heels and which is called homeward-bound pennant, also.

Superstitions: It is very amusing to read of the American commodore who used to speak to his mizzenmast. It may be hard to believe of a modern man, but still I understand this officer but too well. For anybody whose heart is in the right place and who has heard the blows with which the last wedge block is driven out from under the ship on the blocks, and she begins to move gently down the ways—a real birth in fact—and makes the water foam at the impact of the down-moving stern; for anybody who has felt a rhythmical rolling mail steamer or packet under his feet; for anybody who has heard the groaning and moaning of a vessel's upper works in a North Atlantic gale; for anybody who has ever stood on the forecastle of vessel pitching into a heavy seaway and rising again, shaking off the spray; for anybody who has ever had a sailing vessel's helm in his hand and who has watched her sails fill and the ship begin to move in a rising breeze; for anybody who has seen a fast motor boat jump over the waves; for anybody who has felt the tension of a crowd waiting breathlessly for a liner slowly approaching her Hoboken pier: for all these it is beyond any doubt that a vessel is not merely an inanimate thing, but more than that, a being born, living, and dying just as ourselves!

Submarine Service for Profit and Pleasure

(See page 193, March, 1929, PROCEEDINGS*)*

REAR ADMIRAL F. B. UPHAM, *U. S. Navy.*—I have derived both profit and pleasure from reading Lieutenant Kirkpatrick's article on service in submarines. Happily brief as is that article, it conveys much to him who will reflect upon the professional advantages to be realized by service in these vessels.

Greater even than the advantages to be derived from technical training in the operation of Diesel engines and of electrical appliances is the opportunity offered for the early exercise of command—the hope, the aim, the ambition of every officer.

In no other branch of our service may a "J.G." enjoy the command of a combatant vessel of the United States Navy. In no other branch will he so soon find himself in training, by the actual exercise of command, for larger commands. It is the first and best step up the ladder.

It is a veritable postgraduate course in command.

It has in training today a body of commanding officers.

PROFESSIONAL NOTES

2 April to 1 May

Commander F. W. Rockwell, U. S. Navy
Lieutenant Commander A. C. McFall, U. S. Navy
and
Professor Henry Bluestone, U. S. Naval Academy

Great Britain
Comment on Recent Fleet Maneuvers 531

United States
Comment on Mr. Gibson's Address at Geneva 532

France
Speed Trials and Fighting Qualities of the *Guepard* 533

Merchant Marine
Americans Offer Sea-safety Code 534

Engineering and Radio
Torpedo Boat Destroyers for the Chilean Navy 537
Proposed Application of Television to Aërial Use 539

Aviation
Interceptor-slot Adds to Slotted-wing Safety 539
New Method Developed for Installing Automatic Slots 540
Load Factors 541
The Handling and Mooring of Airships 542

Miscellaneous
H. M. Battleships *Nelson* and *Rodney* 543

Current Articles and Books 548

GREAT BRITAIN

Comment on Recent Fleet Maneuvers

The Baltimore *Sun*, April 24, by Hector C. Bywater.—The recent maneuvers in the Mediterranean were of exceptional interest from several points of view. Certain exercises were conducted with ships steaming at full speed—this being rendered possible by rigid fuel economy beforehand—and aircraft were given every chance to show their mettle. As a result the operations were extremely realistic.

All the same, our people read with envy of the American maneuvers off Panama, in which 200 planes were engaged. Our combined fleets were able to muster only about 100. Perhaps Mr. Britten will take note of the fact that on March 1 this year the American Navy owned 867 effective airplanes, a figure vouched for by Mr. E. P. Warner, then Assistant Secretary of Navy for Air. In air power the American Navy is at least four times as strong as the British.

In the course of the operations I witnessed a series of air attacks on the battle fleet, and came to the conclusion that the overhead menace to surface ships, while undoubtedly serious, is not yet deadly. Most to be feared, I think, are the low-flying fighter planes that swoop down to machine gun decks, bridges and control positions. Owing to their tremendous speed they probably could defy anti-aircraft fire. Bullet-proof armor on the bridge and on all other important stations above deck seems advisable. Otherwise the casualties among officers and men exposed to aircraft machine-gun fire promise to be heavy in any future sea fight.

Torpedo plane attack did not impress me as being a mortal danger to ships. A large number of torpedos were actually launched at us, and no doubt hits were made, but as the attacking machines were in full view for several minutes before getting within torpedo range I am sure that, had our squadron's guns been shotted, many of the assailants would have been brought down.

The technical difficulties of torpedo-plane attack are formidable. Unless the torpedo be dropped from a low height it is likely to break up or damage itself, but in coming down close to the water to launch its missile the plane offers a fine target to light armament fire. Putting down a point-blank barrage by the secondary battery guns appears to be one of the best defenses against torpedo planes.

Of aërial bombing results I cannot speak from personal knowledge, but it is generally conceded that torpedo attack is more to be dreaded. On the whole, my experiences with the fleet at sea during the last twelve months have entirely failed to convince me that aircraft can supplant any existing type of warship. This, it is true, is only a civilian's view, but it rests on careful observation of a great deal of aircraft demonstration and is, I think, shared by the majority of naval men here.

In their present stage of development aircraft are chiefly useful as scouts. As such they are simply invaluable. A fleet without adequate air reconnaissance would be virtually blind. Nevertheless, it would not be prudent to rely solely on aircraft for scouting duties. In very bad weather they might be unable to fly off from the carrier ship, to say nothing of getting back to her.

The cruiser is still indispensable for a variety of functions—commerce protection, scouting, anti-destroyer work and so forth. To be effective, she must have high speed. It is worth noting that of the dozen British cruisers engaged in the recent maneuvers only two could steam at thirty knots. They all dated from the war period and their speeds were too low for modern requirements.

A cruiser for service with the battle fleet does not need to be very large or very heavily armed, but she must be fast. Evidently our two six-inch gun cruisers of the 1929 program are designed for fleet work and will be very light ships, in contrast to the 10,000-ton eight-inch gun vessels we have been building up to now and which are intended primarily for trade protection.

Destroyers and submarines distinguished themselves in the maneuvers and both types are essential to a well-balanced fleet. As for the battleship, I cannot see that its day is done. The big gun is still the deadliest and most accurate weapon and it can be taken to sea only in big, robust, well-armored ships.

Whether the capital ship of the future will be a 35,000-ton monster mounting sixteen-inch guns or a smaller motor-driven vessel like the German *Ersatz Preussen*,

armed with twelve-inch guns, no one can foretell at this juncture. In this country, however, there is a distinct trend toward smaller battleships, and I personally doubt if we shall build any more Nelsons or Rodneys. There is also a tendency, as exemplified by the latest cruiser design, to break away from the stereotyped dimensions and armaments of the Washington treaty.

All that can be predicted with reasonable certainty is the survival for many years to come of the floating big-gun platform—in other words, the capital ship. Ask any group of naval officers what is most to be feared in action and nine out of ten will reply, "A well placed salvo of major caliber projectiles."

UNITED STATES

Comment on Mr. Gibson's Address at Geneva

The Baltimore *Sun*, April 24, by Dudley W. Knox.—Washington, April 23—Reduced to its simplest terms, the highly constructive speech of Mr. Gibson at Geneva on Monday amounts to saying three things. A complete limitation to include all types of naval units is essential to stop the existing competition in naval armaments, which prevents the stabilizing of the spirit of the Kellogg pact. The Gordian knot as to method of limitation should be cut, and the United States is ready to accept any method which is equitable. The United States is also ready to adopt any scale of quotas "which maintains the relative status of existing treaties" and which will amount to a reduction "however drastic," of naval tonnage. This is in substantial accord with the previous position of America, maintained during and since the Washington conference of 1921-22.

Partial limitation is a legacy of the Washington conference where only capital ships and airplane carriers were restricted, both as to individual size and total tonnage. Unfortunately, the negotiators on that occasion failed to include the smaller naval units in the agreement and left a free hand for the future construction of cruisers, destroyers, submarines, etc., except as to the size and gun caliber of individual cruisers.

This incomplete agreement was reached notwithstanding the earnest advice of American naval experts, who pointed out that merely partial limitation could not possibly be effective in stopping competitive building in the unlimited classes, and that this condition would not only make for substantial alterations in the theoretical relative strengths of navies, but also keep alive international suspicions and other elements working against stabilized peace.

This view was not shared by the American delegation at large, comprising only seven naval officers out of eighty-two members. One of the most prominent of the civilian delegates expressed the common view that "this agreement ends, absolutely ends, competition in naval building."

The high rate of new construction, especially in cruisers, which was begun soon after the Washington conference by all the signatory powers except the United States, faced us with the need either of undertaking large-scale construction ourselves to maintain relative strength, or else obtaining a new international agreement which would fix a maximum limit on cruisers and other naval auxiliaries. The latter alternative was selected by President Coolidge, who called the Geneva Naval Conference of 1927 to that end. There we made an unsuccessful effort to correct the defect of incompleteness in limitation agreements.

Mr. Gibson's recent pronouncement is in exact line with this long sustained position.

The question of method of limitation has become highly complicated and controversial ever since the Washington conference. There Mr. Hughes followed the advice of the general board of the navy and divided ships into several classes, within each of which a maximum quota of tonnage was to be allowed.

The classes adopted were capital ships, airplane carriers, cruisers, destroyers and submarines. No exception was taken to this at that time.

Later, at the League of Nations preparatory commission for disarmament the French put forward a so-called global method by which the entire tonnage of a navy was to be the only limited measurement, each nation being left free to decide for itself how much of this total tonnage it would allocate to each of the battleship and other classes.

The British and ourselves, as well as

others, have opposed this system of limitation and advocated adherence to the method followed at Washington. Now Mr. Gibson says: "Methods are of secondary importance. For us the essential thing is the achievement of substantial results."

It is time for such a stand.

Finally, with regard to the amounts of the respective quotas of naval armament, Mr. Gibson virtually reiterates the position our delegation took at Geneva during the conference of 1927, when he was also our senior delegate.

We wish a genuine reduction from the existing levels in the auxiliary classes which have grown to excessive proportions from the fact that they have not been limited heretofore, and money saved from limited classes has been available for the building of auxiliaries.

To be genuine, a limitation should not be placed at too high a figure. Mr. Gibson has been most emphatic in stating our position by saying:

"We are willing to agree to any reduction, however drastic, of naval tonnage."

It has been suggested in some quarters that this contains an element of "American bluff." In one sense that may be true, but there is no bluff in our willingness to go as far as any other of the naval powers will consider. Substantially the same thing was said at Geneva by the American delegation which then placed before the conference a concrete proposal for a cruiser quota of from 250,000 to 350,000 tons. Our lower figure was about half the amount of the lowest which the British ever brought forth.

Moreover, Mr. Gibson qualified his recent statements so that they are not so extravagant as a superficial consideration might make it appear. One of his fundamental conditions was that in the existing treaty, "relative status" of navies should be preserved.

This is nothing less than the old question of "parity" between America and Britain, together with the more general 5-5-3 ratio, which was established by the Washington conference, and which has been badly invalidated by the subsequent steady construction of auxiliary ships by England, France, Italy and Japan. As heretofore, we still insist upon our right to a navy equal to that of any other power, however drastic further all-around cuts may be.

A further fundamental condition is that new agreements shall leave "no type of war vessel unrestricted," which amounts to correction of the partial limitation defect previously discussed. He also specified that he was speaking of principles only and that "all quantitative proposals of any kind should properly be reserved for discussion by a final conference." Considering these qualifications, there appears to be no justification for implications that Mr. Gibson might have been bluffing.

It is gratifying to note that the replies of Lord Cushendun and the representatives of other powers indicated a readiness to compromise on the question of method of limitation, which has been the principal stumblingblock to agreement for several years.

The other chief obstacle to compromise between this country and Great Britain—the matter of parity—is really more political than naval, since it involves national policy in large cross sections, and is more likely to be settled at the forthcoming British elections than at Geneva or other conference tables.

FRANCE

Speed Trials and Fighting Qualities of the 2,690-ton "Guépard"

Naval and Military Record, April 10, by J. B. Gautreau.—Extremely brilliant speed trials have just been accomplished by the 2,690-ton *Guépard*, contretorpilleur built by the Lorient arsenal and fitted with four small-tube Guyot boilers and with Parsons turbines, manufactured by the St. Nazaire Ateliers et Chantiers de la Loire. With just over her nominal motor power of 64,000 h.p., she maintained 35.91 knots for eight consecutive hours in fine weather on March 29 off the Brittany coast. On the following day, with 73,500 h.p., she easily maintained 38.45 knots, the fuel consumption remaining relatively moderate. The *Guépard* is built on the same lines as the famed *Tigre*, produced by the Nantes Chantiers de Bretague, and that attained 36.93 knots with 57,000 h.p. (Rateau turbines). The *Tigre* is smaller than the *Guépard* by thirty tons, and shorter by thirteen feet. The *Tigre*, it will be remembered, was the prototype of her series of six, and obtained re-

sults superior to the other five (*Iéopard, Lynx, Panthère, Jaguar, Chacal*), the worst performances (35.5) having been those of the Lorient-built *Jaguar* and *Panthère.* Lorient has since made good progress, as shows the prowess of the *Guépard;* and it is expected the *Bison,* also under trials at Lorient, will not prove inferior at full power. There is, on the other hand, reason to believe the *Verdun* and *Valmy,* just completed at St. Nazaire, and that are improved copies of the *Guépard,* will further improve on the magnificent performance of that contretorpilleur. The *Lion* and *Vauban,* in hand at Dunkirk, and both to become available in 1929, belong to the same type, with the consequence that France will possess within some eight or nine months in commission a fine super-destroyer squadron of 38 knots, without contest the fastest and most powerful in the world.

No doubt the Spanish *Churruca* (now *Cervantes*) and the Italian *Crispi* and *Turbine* are claimed to have approached forty knots; but they were then in a light condition far removed from their service trim, with no armament or only part of it on board. And everybody knows that in destroyers one hundred tons or so more or less make a great difference in speed. Speed service, or something approaching it, is what is of importance to ascertain. When the French *Tigre,* that is under the Washington rules merely a 2,160-ton boat, put to sea for her eight-hour trials and realized an average of 35.93 with her normal power, she had a displacement of 2,564 tons. At her Washington loadline she would have attained forty knots easily with the 57,000 h.p. she produced at her full power test and with a fuel consumption below what had been expected.

But even if the thirty-eight and forty-knot performances of 1,200 and 1,300 tons were bona-fide service performances or anything like it, they would not probably mean superiority of speed at sea, in an ordinary seaway, over boats of 2,400-2,700-ton displacement like the *Tigres* and *Guépard,* that have cruiser hulls. The freeboard of the *Guépard* is rather higher than in British cruisers of the "C" class, and her bows are much better protected against the sea. Nothing better had as yet been designed for safe, reliable steaming against heavy seas; and even 1,500-ton torpilleurs d'escadre, that reproduce the hull lines of the *Guépard* and of the 8,000 and 10,000-ton cruisers, partake of those valuable nautical qualities that mean high speed, and comfort, in nasty weather. There is therefore no 1,300-ton destroyer in any fleet which a *Guépard* could not catch on the high sea; and the French boat arrays five guns of 138 milbore capable of firing 80 pound shells at 26,000 yards. And compared battle practice at sea has shown that the 2,400-ton *Tigres,* that are inferior to the *Guépards* from the standpoint of stability of platform, can accurately fire their guns under conditions that would prove trying for gunners of smaller destroyers of pre-war types.

As the *Guépards* are intended for the Mediterranean, an interesting question is whether they have any chance to excel in the matter of speed the six 5,300-ton cruisers of 95,000 h.p. and thirty-eight knot speed which Italian yards are now building or preparing to build. While rendering justice to the great talent of Peninsular constructors, Paris experts consider French 2,700-ton super-destroyers, that are the outcome of elaborate tests as to hull designs and water resistance, will be able to hold their own at speeds of 36-38 knots against any 5,000-ton ship not exceeding 100,000 h.p., especially when it is remembered that 5,300-ton Italian scouts will at service load have a displacement of some 6,700 tons, the *Guépards* themselves slightly exceeding 3,000 tons. It is a question of power, but also of hull lines, and French experts are sanguine as to the superiority of the *Guépard* type over all comers, and they confidently expect the twelve improved *Guépards* (1927-28 programs) building or just ordered, will attain forty knots, as some practical progress has been realized in their motor department and 80,000 h.p. is likely to be registered at full power. Moreover for the purpose of war, the *Guépards* deserve to be treated as cruisers; the 5.5-inch gun, patiently worked on and improved by French artillerists, could, of course, have a say against 6-inch weapons at any range. On the whole the 2,700-ton contretorpilleurs are a good investment.

MERCHANT MARINE

Americans Offer Sea Safety Code

New York *Times,* April 23.—A general stiffening of safety requirements in almost

every department of shipping is recommended by the American delegation to the International Conference for the Safety of Life at Sea, which opened here last week. The proposals of the American group were submitted to the conference through its committees over the week-end and were made public today by Representative Wallace H. White, junior chairman of the United States delegation.

In all such matters as life-saving appliances, fire protection and ship construction these proposals represent a notable advance over the rules of 1914, which were adopted by the last international conference on the subject. They have been occupying technical men for many months, and the American delegates are convinced that they offer that "highest practicable standard" of safety to which President Hoover referred to in his letter of instruction to the delegation.

In many respects the American proposals tally with the recommendations of the British Board of Trade, and thus stand a good chance of being adopted by the conference.

Among the drastic changes proposed is a new regulation for lifeboats. Present regulations insist upon lifeboats capable of accommodating all persons aboard the ship. The proposed new rule provides that "in addition to lifeboats for all, there shall be liferafts for not less than 25 per cent of all aboard. On vessels where fifty or more passengers are carried, one motor lifeboat shall be provided. Where more than 800 are carried, two motor lifeboats shall be carried."

Wartime experience, when torpedoings and sudden sinkings were frequent, is said to have demonstrated the need for lighter and more mobile means of rescue than lifeboats.

The American proposals also call for adequate provision for children's lifejackets, inasmuch as some lifebelts in use today are too unwieldy for children.

For rescues in rough weather, when the use of lifeboats is impossible, the proposals provide that every vessel must carry a gun capable of throwing a line not less than 1,400 feet.

The horrors of a ship sinking at night would be mitigated to some extent by the new regulations for lighting the water around the ship. The old rules insist that every lifeboat on deck must be illuminated, but often lifeboats are lowered into inky blackness and their occupants drowned. The American proposals recommend the adequate flood lighting of the water as well as the boat deck.

Each motor lifeboat would have ample covering against rain and carry wireless receiving and sending apparatus capable of covering a radius of fifty miles.

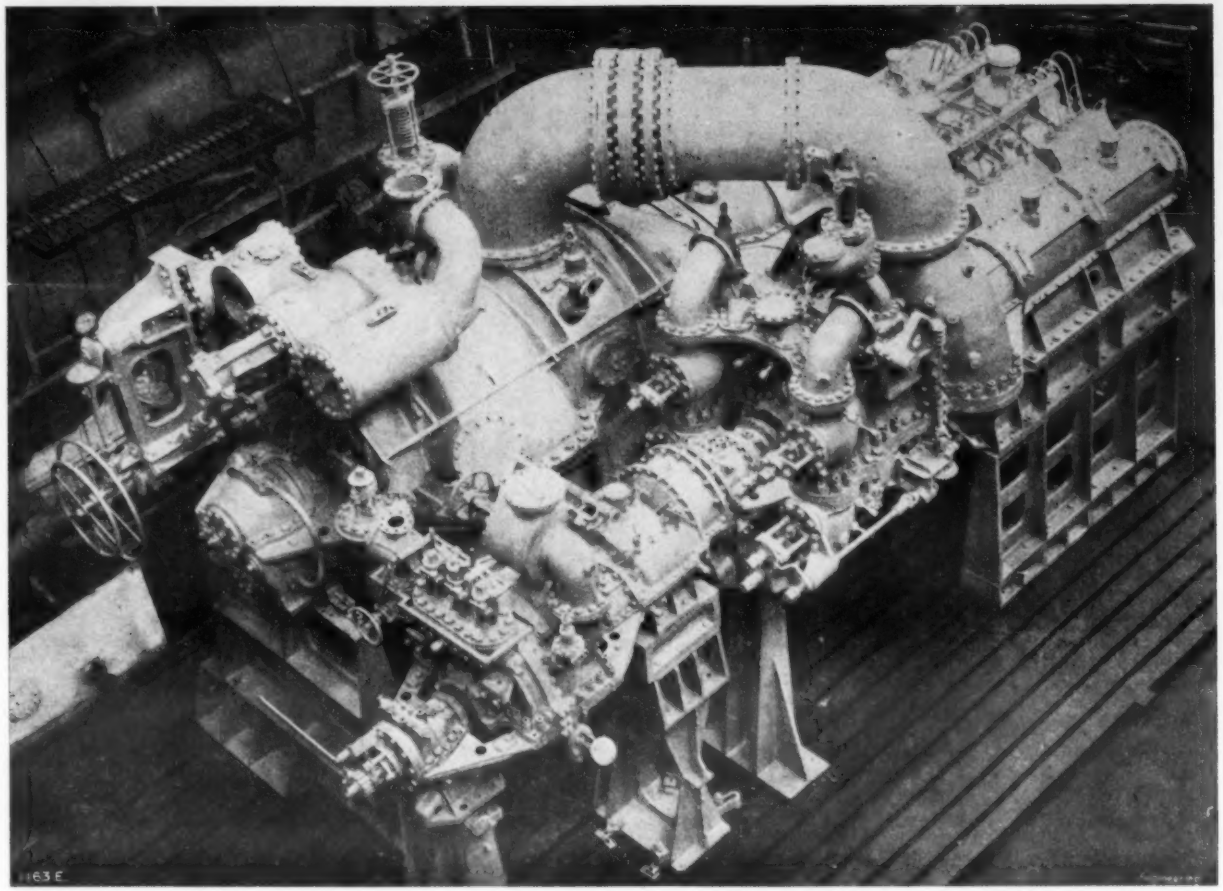
To guard against fire, the proposed regulations call for an alarm audible in every sleeping compartment. Intermittent ringing would be the signal of fire while continuous ringing would mean abandon ship. Hoses would have to be placed so that two powerful jets of water could be thrown into each compartment holding cargo.

The American delegates insist that every vessel must carry a radio compass so it can obtain bearings from a direction-finding station. They recommend that life-saving signals be made international and also call for an international system of buoys and buoy lighting. As most collisions are caused by thick fogs, the proposals call for foghorn blasts every minute instead of every two minutes as at present.

A proposal that is expected to arouse comment deals with seaplanes taxiing along the water. To shipping men a plane is a plane only as long as it stays in the air. When it lands on the water it is, to all practical purposes, a surface ship and must be regulated as such. A whole set of rules is proposed by the American delegation for dealing with aircraft on the water. If the proposals are adopted the same rules of the road would have to be followed by seagoing aviators as by ship captains.

There are hundreds of other recommendations, many of them highly technical and explainable only by complicated formulæ. One recommends a stability test for all new passenger ships before they are placed in commission. Another provides for a shortening of watertight compartments to sixty feet plus 5 per cent of the ship's length. Another would increase the ships on the international ice patrol from two to three.

Altogether the American delegates are satisfied with their work and, although some of their proposals may encounter rough handling in the conference, they feel they have made a forward-looking set of



PORT SET OF TURBINES AND REDUCTION GEARING, IN BUILDERS' WORKS
Machinery for Torpedo Boat Destroyers for the Chilean Navy

proposals which other nations might well follow.

ENGINEERING AND RADIO

Torpedo Boat Destroyers for the Chilean Navy

Engineering, April 12.—The delivery is now being made of six torpedo boat destroyers, which have been built by Messrs. John I. Thornycroft and Company, Ltd., Southampton, to the order of the Chilean Government. These vessels were contracted for in June, 1927, and the first one, the *Serrano,* annexed, was handed over in September 1928, having been completed in about fifteen months. The first two vessels have been despatched and have reached their destination, two others are lying at Southampton accepted, and are shortly going out; the fifth is expected to be handed over in about a fortnight, and the sixth will undergo final trials in the next few days.

These vessels are of the sea-going class, and of about 1,350 tons displacement. Their principal dimensions are:—Length between perpendiculars, 288 ft. 3 in., breadth, 29 ft., and depth, 18 ft. 3 in. The hull is of steel, high-tensile plates being used generally for shell plating, the upper deck and longitudinal framing. A ram stem is fitted and the forecastle is of exceptional length to provide good accommodation for the crew and ensure ample bridge space and protection from weather.

The armament consists of three 4.7 guns, one anti-aircraft gun, and six machine guns. Electrical fire controls, range finders, etc., are fitted. Two twenty-one inch triple-revolving tubes of the Whitehead latest pattern are mounted in the middle line of vessel, a complete electrical system being fitted for torpedo control. Two Thornycroft depth-charge throwers are arranged aft. The first three vessels are fitted with paravanes aft for mine sweeping and the last three are fitted as mine-layers.

Accommodation is provided for a total complement of 130 officers and men. The living spaces for the crew are arranged on the forward lower deck, and as implied above, in a specially long forecastle. The officers' quarters are in the aft end of the ship, and include a comfortably fitted wardroom. The captain has a special suite, consisting of a day cabin, sleeping cabin and bathroom. He is also provided with a sea cabin on the bridge. The officers and crews quarters are lined with three-ply wood, so as to prevent condensation, and to render the vessels more comfortable in extremes of either heat or cold. This wood lining, together with other woodwork, has been treated by the Oxylene process to render it fireproof.

The accommodation for those warrant officers berthed aft consists of a mess room and four cabins. The entrance lobby to this accommodation is arranged in the after deckhouse. A bathroom opening on to the lobby is allocated to the warrant officers. Another bathroom is placed on the lower deck where it is conveniently adjacent to the officers' cabins. The entrance to the captain's and officers' cabins is arranged in the aft deckhouse, which also contains a galley, paymaster's office, and auxiliary wireless. Provision for the comfort of the crew includes such amenities as a recreation space, shower baths, and a large sick bay.

The vessel is lighted, heated and ventilated electrically throughout, and for food storage, ice-making, etc., a Frigidaire set of large capacity is fitted.

With regard to the machinery installation, after carefully considering the various types suitable for this class of vessel, it was decided to fit Brown-Curtis high-pressure turbines, with Parsons' reaction turbines for the low-pressure and astern machines; for improving the economy at low powers, cruising turbines of the Brown-Curtis type were provided.

The main turbines, running at speeds of 3,000 and 2,100 r.p.m. for the high pressure and low pressure, respectively, drive the propellers at 375 r.p.m. at full power. Each cruising turbine is coupled to its respective high-pressure turbine through helical gearing and a flexible clutch coupling; an interlocking gear is fitted to prevent steam from being admitted to the cruising turbines before the high-pressure nozzles are shut off and the cruising turbines are in gear. There are two of the latter and each has two three-bucket wheels, the blades of the first row being of Monel metal and the remainder of phosphor bronze. They are designed to be in use for powers up to a total of 3,500 shaft horse-power. They will also

run safely at the full-speed revolutions of the main machinery.

The high-pressure turbine has six stages, one being specially fitted for cruising powers. Groups of 5, 6, 7, 8, 10, and 10 nozzles are fitted for use at various powers, and interstage valves are arranged for using the cruising stage in series or in parallel with the first stage of the main turbine. The blades generally are of Firth's stainless steel, the first rows of the first and second stages being of Monel metal. The low-pressure turbines are of the two-flow Parsons' reaction type, no dummies being required; there are eight expansions in each turbine.

The astern turbines are impulse-reaction machines, one being arranged in each low-pressure casing. They are designed to give two-thirds the full power ahead revolutions about one-third the ahead power. The blades in the astern impulse wheels are of manganese copper, while for the low-pressure ahead and astern reaction turbines they are of brass.

The gears are of the single-reduction double-helical type, the diameter of the main wheel being 80.1 inch, and length of face 40 inches. The pinions are of nickel-steel; the main wheel is of the built-up plate type, with mild-steel rims. The thrust blocks are of the Michell type, having 367 square inches of bearing surface on the ahead and astern sides, and are fitted with arrangements for measuring the propeller thrust on the ahead side.

The condensers are of the underslung Weir regenerative type, and have large wells in the base for feed reserve. Cooling water is supplied by two main circulating pumps, each driven by a two high-pressure-cylinder engine of the enclosed forced lubrication type of Messrs. Paul's manufacture. A vacuum of 28-inch was easily maintained at full power.

The boilers are of the Thornycroft type, three in number, and all barrels are cylindrical, the lower ones being seamless. When the vessels were in the early stages of design the question whether it would be advisable to fit superheaters to these boilers was carefully weighed, and taking into consideration the extra cost, upkeep and weight, and small gain in economy at low power, saturated steam at 250 pounds pressure was decided upon.

The total heating surface of the boilers is 24,600 square feet, and the tubes are of seamless steel, the two rows next to the fire being 1½-inches in external diameter and the remainder 1⅛-inches in external diameter. The boilers are arranged for burning oil only, thirteen Thornycroft burners being fitted to each boiler. These are particularly adapted for use in water-tube boilers of the three-drum type. Firebricks of the Wildish type, with the heads of the bolts concealed, have been adopted.

The feed water is supplied to the boilers by means of a Weir closed-feed system, the air and water being drawn from the condensers by two three-stage air ejectors and two direct driven turbo water-extractor pumps. The water so drawn off is delivered through low-pressure heaters to the main feed pumps which are two in number and of the turbine-driven type.

For cruising purposes up to 3,500 shaft horsepower, one of the auxiliary feed pumps of the Simplex type is used. This pump delivers the water to the boilers through a high-pressure heater situated in the aft boiler room, the heater being supplied with steam bled from the cruising turbines after the first stage. One of the ejector-condensers fitted in connection with the closed feed is of extra large capacity, and is used as an auxiliary condenser for harbor work. For auxiliary feed purposes, three Simplex pumps, 14½ inches by 10 inches by 18 inches, are fitted in the stokeholds. Air is supplied to the boilers by six fans each 58-inches in diameter, driven by an Allen turbine through helical gearing. The revolutions of the fan turbines at full power are about 6,500 per minute. These sets are of the vertical type and the turbines are fitted with overspeed trip governors.

One evaporating and distilling plant, capable for evaporating forty tons fresh water a day, is provided for make-up feed for the boilers and for drinking water. The auxiliaries include two electric generators by Messrs. Allen, each of 26 kw., driven by a two-cylinder enclosed forced-lubrication engine, and, in addition, for harbor service, a 15 kw. oil-driven generator is supplied. Three vertical reciprocating Weir pumps are provided for supplying the lubricating oil to the main and cruising turbines and gears. The steering gear by Messrs. Bow McLachlan, is of the ordinary steam-driven type, with the engine geared to the main

shaft through a worm and phosphor-bronze wheel. Oil fuel is supplied to the boilers by three vertical Simplex pumps with large air vessels. One steam and two electrically-driven Weir pumps are provided for bilge and fire service. High-pressure air for charging torpedoes, etc., is supplied by a multi-stage compressor of Whitehead type. A Crokatt salt-detector is fitted in connection with the feed service to the boilers.

In addition to the usual harbor trials, exhaustive trials at sea have now been carried out on these vessels, with satisfactory results. At full power, the speed under contract conditions was exceeded without unduly forcing the machinery, while the oil consumed on the trials to determine the radius of action was 10 per cent below that required to give the radius desired. The trials of the *Serrano* were carried out at Skelmorlie, and included progressive runs at 10, 12, 13½, 14, 15, 19, 23, 26, 30, and 32 knots, and at full speed. Gun trials, circle turning, astern-running and steering trials were also carried out, and torpedoes were fired at speeds of 20, 25, 30 and 35 knots.

Proposed Application of Television to Aërial Use

New York *Times,* April 21.—Still further usefulness for airplanes in war is promised by the announcement of C. Francis Jenkins, television inventor, that he is at work perfecting his apparatus for use in the air. He hopes to develop a television set by which a pilot can make the terrain over which he is traveling visible to persons at a receiving station. With such a device a pilot could train his mechanical "eye" on any point of interest and the receiving set would "paint" a series of pictures of it on a screen at such a rate that, as in the case of the ordinary movies, they would seem to be continuous. Mr. Jenkins's first effort, according to the announcement, will be to develop a set that will have a transmitting range of about 500 miles.

Military men in particular are watching the development because of the uses to which aërial photography has already been put. In the World War observation planes were highly successful in getting photographs of the land behind the enemy lines. These were pieced together to give complete pictures of a section, which, when studied compared with previous photographic maps, were invaluable in telling what the enemy was doing; and when compared with the ordinary detailed ground maps of similar scale would locate exactly gun emplacements, airplane hangars and other targets at which the artillery wished to fire.

The television device would enable the intelligence officers to follow the actual flight while in progress, so that if a particularly interesting object came into view, an object that had not appeared on a photograph taken perhaps a week before, the pilot could be directed by radio to get as close to it as possible.

Especial attention has been centered on the possibilities of observations of this kind because of the work of Lieutenant George W. Goddard of the United States Army Air Corps in developing night aërial photography with the use of large bombs of flash-light powder. He has been able to take photographs of buildings covering large areas which have practically the same clearness as those taken by day. And, by using a rapid developing process, he has already demonstrated that a picture taken at night at Fort Leavenworth, Kansas, and sent by radio, could be placed in the hands of military commanders in New York and San Francisco in forty-two minutes.

A difficulty in the way of putting television from the air to practical use—aside from that of perfecting a nicely adjusted machine to withstand the shocks of take-offs and landings—is that the process at present does not handle minute details well. While this might impair television's usefulness in ferreting out concealed gun emplacements, it would not interfere with seeing smoke from exploding shells or movements along the ground, such as troops on the march or trains.

AVIATION

Interceptor-slot Adds to Slotted-wing Safety

New York *Times,* April 21.—The problem of lateral control beyond the normal stalling angle has at last been solved, according to F. Handley Page, the British airplane designer, who recently announced the invention of the interceptor slot. As this device has been fully tested in free flight, it seems certain that another contribution has been made to safety.

The interceptor slot is a long, narrow plate, situated at the wing tips behind the normal automatic slots on the leading edge. In its normal position it is hidden in a recess in the wing, parallel and close to the front spar. To it are attached three rods working on springs and fastened at the other end to the aileron. When the aileron is lifted the rods push against the interceptor plate and cause it to rise vertically.

When a plane is normally stalled it either nosedives or heels over into a spin. At and beyond the stalling angle there is no way of controlling a plane, for, theoretically, the plane is inert, a dead weight falling through the air. It becomes controllable again only when flying speed has been regained.

The automatic slots enable a plane to go on flying even though it has, normally, lost most of its flying speed. This may be said to be done by capturing the force of gravity, as the plane begins to sink through the air toward earth, and converting it into lift. In other words the slots pull the centre of lift forward and so enable the plane to keep on flying at speeds so low that they do not register on the air speed indicator. Flying at such low speeds, however, makes the ailerons sluggish and of little use in controlling the plane. When used, they have to be worked so extremely that considerable rudder is necessary to offset the tendency to turn, and in an emergency they are too slow.

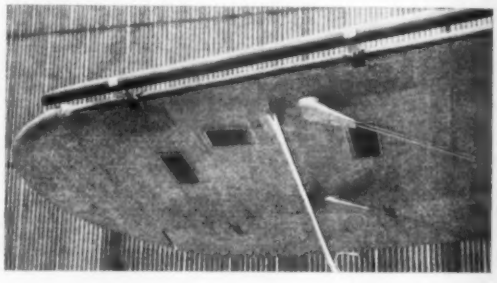
Now, if one slot were closed and one opened, the wing with the closed slot would immediately stall, assuming the plane to be at a normal stalling angle, while the wing with the open slot would continue to lift. It is thus plain that if one wing dropped the way to raise it would be to close the opposite slot; the dropped wing would then continue to lift, while the high wing would stall and drop, and a level keel could thus be attained.

It is precisely this effect which the interceptor slot attains. A plane is flying along with its slots open. Suddenly the right wing drops. The pilot immediately raises the left aileron and depresses the right. This movement of the control stick causes the interceptor slot to spring into a vertical position. The effect of this narrow panel is to destroy the effect of the automatic slot in front, causing the air to eddy and flow off over the upper surface of the wing, which in turn results in a loss of lift and increases the resistance of the wing. In other words, the left wing stalls, and, as it falls level with the right, which is maintaining its lift, the pilot centralizes his controls, the interceptor closes and the plane resumes normal flight.

New Method Developed for Installing Automatic Slots

Aviation, April 27.—A new method of installing automatic slots on the wings of an airplane has recently been devised by the engineering department of the Curtiss Aeroplane and Motor Company. It was developed in connection with the installation, at the request of the Bureau of Aëronautics, of slots on a Curtiss "Seahawk."

Former practice in the installation of slots has been to attach the auxiliary foil



DEVELOP SPECIAL SLOTS FOR SEAHAWK

to the wing by means of links pivoting on supports located underneath the wing in the airstream. On the Seahawk, on the contrary, the slot mechanism is housed entirely within the wing, the auxiliary foil being attached by means of four steel tubes, which slide in and out of the leading edge between rollers held in metal frames bolted to the forward wing spar. A locking device is provided, the advantage of which lies in the fact that when desired the slots can be rendered inoperative to prevent interference with maneuverability.

The Curtiss type of installation is said to be very efficient. It was developed by experiment with large scale models in the Curtiss wind tunnel. Actual operation of the slots in flight tests at Mitchell Field, Long Island, was found to be very satisfactory, with landing speed reduced, and lateral control provided at the stalling point.

Load Factors

Aviation, April 13.—Because there has been considerable discussion and misunderstanding regarding load factors, it is believed that an article of explanation is needed at the present-time.

A load factor consists of two parts, a factor of safety and the expected load. A factor of safety of two is universally used. This factor of two is considerably overworked, because in it are included the following factors:

(1) Probability that some of the materials used in the construction of the airplane are not in accordance with the specifications used in the design.

(2) Poor workmanship consisting of poor welds; parts not fitted accurately; members, particularly wing beams, being routed to a greater depth than called for in the design, etc.

(3) Deterioration in service: Many planes spend considerable time out in all sorts of bad weather, resulting in loss of strength of fabric and of some structural members due to corrosion and in some cases to decay. Some planes are put through severe stunting with light loads and suffer seriously in having members stressed beyond the elastic limit.

(4) Factor of ignorance which takes into account the lack of knowledge of the loads actually imposed on aircraft under various conditions.

An examination of these four items indicates that the factor of safety of two is none too large.

The loads to be expected have been selected from experiments made by the U. S. Army Air Corps and by the National Advisory Committee for Aëronautics. Several years ago an Army aviator made a number of experimental flights in an airplane in which an accelerometer was installed. This instrument gives readings which indicate the magnitudes of the loads to which the wings of the airplane are subjected. In the various maneuvers which the airplane was put through it was found that the worst load came in pulling out of a fast dive sharply. In this case a load equal to about eight times the weight of the airplane was put on the wings. Barrel rolls were next in severity amounting to about seven. Very severe bumps encountered as a result of passing through storms, or over certain kinds of terrain, gave loads of a little more than three. A short time ago an experimental pilot at Langley Field actually obtained a load of a little over eleven on the wings of his plane in pulling sharply out of a steep dive at very high speed. As a result of the Army tests, the Navy and Army Air services decided that while the pilot making the experimental flights obtained a load on the wings of about eight times the weight of the airplane, the average pilot in executing his required maneuvers would not put on a load of more than six on the wings. Multiplying this load of six by the safety factor of two gives the load factor of twelve which is used in the design of pursuit planes for the Army and Navy.

Training planes for the Army and Navy are designed on load factors of eight and seven and a half, respectively, because it is considered that these planes will not be subject to such severe loads as the pursuit planes. A load of a little over five has actually been recorded in pulling out of a dive sharply in an Army training plane.

In deciding on the load factors to be used on the wings of commercial airplanes, the Department of Commerce considered that since the purpose of these planes is to carry persons or property from one place to another without any maneuvers or stunts which would throw severe loads on the structure, the design load should be based on the loads induced as a result of encountering severe bumps. Estimating the load caused by such bumps as three and a quarter, a basic load factor of six and a half was selected for planes weighing up to 2,500 lb. and powered with the OX-5 engine. Since most commercial planes in service today have this power plant, six and a half is the design load factor for the average commercial plane. It is believed that this low load factor may explain the frequency with which planes are losing their wings in the air during recovery from a dive. Nearly every week we see an account of some commercial plane folding its wings in the air, crashing and killing two or three people. When we analyze the conditions and realize that in pulling out of the dive, the pilot may have but five or six times the weight of the airplane on the wings which were designed on the basic load of three and a quarter. The average pilot has no idea of the limitations of his craft; he does not

know that it is not designed to withstand the loads induced by pulling out of a dive; or that it is a very serious mistake to stunt his plane by himself and then carry passengers. The attention of all pilots should be drawn to these facts in order that they may exercise proper judgment in their flying. It may be possible that there should be a special class of commercial planes called training planes designed on higher load factors than the ordinary planes, or else possibly the raising of the entire set of load factors for all commercial airplane design.

The Handling and Mooring of Airships

The London *Times*, April 5.—Major G. H. Scott, in a paper read before the Royal Aëronautical Society last night, discussed the handling and mooring of airships.

He said that the easiest point at which to obtain real strength in the structure of an airship was the extreme nose, and this was one of the reasons why tower mooring, in which the airship was attached to the tower by the nose, would appear to be the logical method of mooring. It must not be assumed that the loads at the nose in tower mooring only affected the actual nose piece itself; the tower mooring condition actually controlled the design of the main framework of the airship for about one-third of its length from the bow aft. But when moored to a tower and allowed to swing freely in the wind, no other important external local loads were exerted on the airship.

With airships of the size of R 100 and R 101 and upwards, it would be practically impossible to handle them on the ground or in and out of the sheds, except in light winds whose direction was up and down the shed, and not at all in winds that had any appreciable component across the shed. In this country handling had always been carried out by man power, no mechanical method having so far been adopted. The introduction of handling rails, as used in Germany and at Lakehurst, would appreciably reduce the number of landing party required, but would not permit of handling an airship in and out of a shed in increased wind velocities to any appreciable extent. The handling rail could, however, be accepted as a proved method and would probably be fitted to all operating sheds in the future, as where continuous operations or any considerable amount of handling had to take place, the saving in personnel would justify the expenditure of the rails.

So far as landing to a landing party was concerned, Major Scott thought that only one factor had been introduced in recent years, and that was the effect of increase of size. The principal effect of this increase was to reduce at any given velocity the dynamic forces on the airship as compared with her gross lift, and as variations in buoyancies due to variations in air temperature were proportional to the gross lift, either the pilot must accurately forecast these variations or land faster. An endeavor to forecast more accurately the conditions was being made by fitting electrically recording thermometers in the meteorological hut, giving the temperature at two or more levels, and by improving the organization for the transmission of the information to the airship before landing, but even then it would probably be necessary to land the two new airships, the R 100 and R 101, faster than the older R 33 class.

This introduced another point, owing to the good aërodynamic form of these ships compared with previous airships and their greatly reduced head resistance as compared with their gross weight. These two airships would maintain their air speed for a considerably greater time and distance than the previous airships. The necessity for ample astern power was therefore increased. That the necessity for astern power increased with the size of the airship was borne out by past experience. With the small nonrigid airship of the Blimp and Coastal type, the necessity for astern power was never felt, as these airships could be landed comparatively slowly even in a dead calm and rapidly lost headway when the engine was stopped or slowed down. As size was increased it was found essential to fit astern power, and although rarely used in the 1,000,000 cu. ft. airships of the R 23 class, was almost invariably used in the better streamlined and larger R 33 class.

Another danger that became increasingly great as the size of airship increased was the danger of carrying away one or more members of the landing party, if the airship was landed too light, as the amount of surplus buoyancy an airship should have when landing was roughly proportional to the gross lift. Therefore, with larger air-

ships it became more and more essential to land to a mechanically operated system such as a mooring tower. The airship pilot of the future would look with horror at the idea of landing to a landing party; it was a manoeuvre only to be carried out in cases of extreme emergency.

The mooring tower at Cardington had been completed for some time. The mooring tower in Egypt was also completed, and two new towers, one in India and one in Canada, were nearing completion. In the two last-named towers, although the principle of mooring was unaltered, the mechanical details of the head were an improvement on the Cardington and Egyptian towers, the head being operated pneumatically.

MISCELLANEOUS

H. M. Battleships "Nelson" and "Rodney"

*Engineering,** March 22.—The terms of the Washington Treaty permitted this country to proceed at once, after its ratification, with the building of two capital ships, and with this exception, all capital ship construction by the Powers signatory to the Treaty was suspended until 1931. It is therefore hoped that an account of these vessels will be of interest to this Institution, and will provide a fitting sequel to the papers read in 1919 and 1920, by former Directors of Naval Construction, namely, "Ships of the British Navy on August 4, 1914," by the late Sir Phillip Watts, and "Naval Construction during the War," and "H.M.S. *Hood*," both by Sir Eustace Tennyson d'Eyncourt. Before proceeding with the *Nelson* design, it may be of interest to place on record a short summary of the history of capital ship design and construction for the British Navy between the time of building H.M.S. *Hood* and the laying down of H.M.SS. *Nelson* and *Rodney*. During this period, a large number of designs was prepared for the consideration of the Board of the Admiralty, embodying the lessons of war experience and the recommendations of the Post-War Questions Committee, as a result of which orders were placed by the Board in October, 1921, for four battle cruisers, the shipbuilding firms selected being Messrs. John Brown, of Clydebank, Messrs. Fairfield, of Govan, Messrs. Swan, Hunter, of Wallsend, and Messrs. Beardmore, of Dalmuir. These ships had an armament of nine 16-inch guns in three triple turrets and sixteen 6-inch guns in eight twin turrets, and a speed of 32 knots, requiring a shaft horse-power of 160,000. The legend displacement on the basis then in use was 48,000 tons, the corresponding standard displacement as defined by the Washington Treaty being 47,540 tons. Their size was limited by the dimensions permitting passage through the Panama and Suez Canals, and by the docking facilities at Rosyth and Portsmouth Dockyards. In succession to these battle cruisers there was under consideration a battleship design, with a displacement about 500 tons greater, carrying nine 18-inch guns and sixteen 6-inch guns, with a speed of 23½ knots. Shortly, however, after the orders for these four battle cruisers had been placed, and whilst the design of the more powerful vessel referred to above was still under consideration, the negotiations which culminated in the signing of the Washington Treaty took place. The construction of the battle cruisers was suspended in November, 1921, before any work had actually begun, and the building contracts were definitely cancelled in February, 1922.

As affecting capital ships, the relevant conditions imposed by the Treaty are: (1) That the standard displacement of a capital ship shall not exceed 35,000 tons; (2) "No capital ship . . . . shall carry a gun with caliber in excess of 16-inches." The influence of these conditions on design was far-reaching. For the first time it was necessary to work to a fixed and absolute limit for displacement which on no account might be exceeded, although it was almost equally important to approach this limit very closely in order to achieve the maximum possible results. It was, therefore, all-important to seek out and adopt every possible means of saving weight, and moreover, to estimate the weight with a very high degree of care and accuracy.

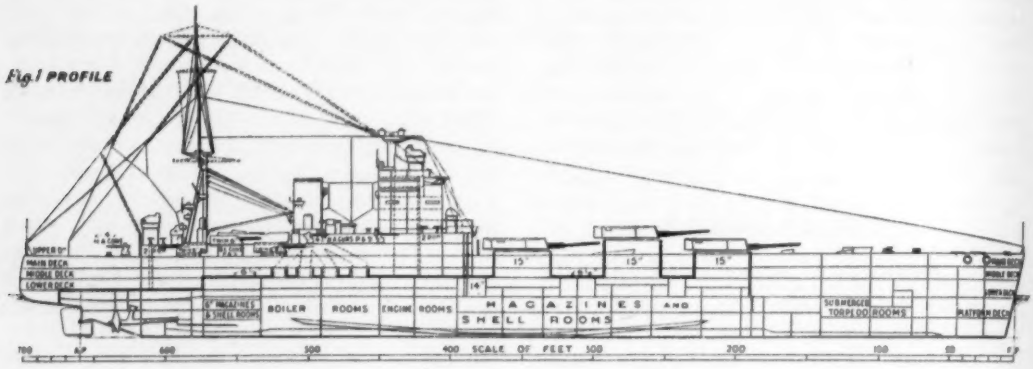
Article II of the Treaty allowed Great Britain to proceed at once with the construction of two new capital ships. The design for the vessels was prepared and the necessary drawings and specifications made during 1922, Sir Eustace d'Eyncourt being

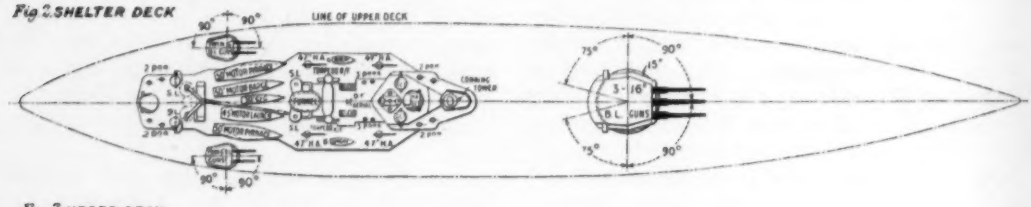
* Paper read before the Institution of Naval Architects, London, by Sir William Berry. Abridged.

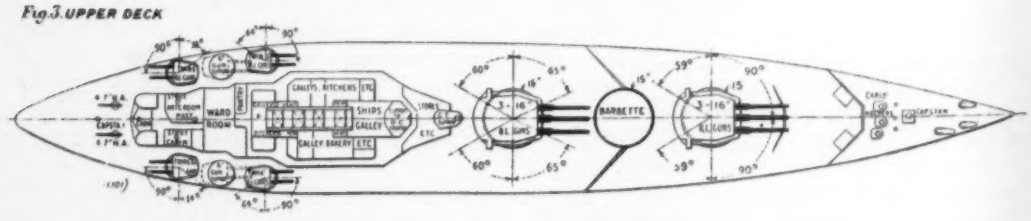
Director of Naval Construction. The principal particulars of the design, as finally approved, are as follows: Length between perpendiculars, 660 feet; length overall, 710 feet; breadth, extreme, 106 feet; draught in standard condition, 30 feet; displacement (standard), 35,000 tons; freeboard, forward, 29 feet; freeboard, amidships, 25 feet, 6 inches; freeboard, aft, 27 feet; shaft horsepower, 45,000 (2 shafts); speed, 23 knots; revolutions, 160 per minute; oil fuel capacity, 4,000 tons; complement (as flagship), 1,400. The approved armament is as follows: Nine 16-inch guns in three turrets; twelve 6-inch guns in six turrets; six 4.7-inch anti-aircraft guns; eight 2-pounder pompoms; two submerged torpedo tubes. The armour consists of, main belt, 14 inch; barbettes, 15 inch; turrets, 16 inch max.; deck, 6¼ inch.

Orders for the ships were placed, on December 11, 1922, with Messrs. Sir W. G. Armstrong, Whitworth and Company for *Nelson*, and with Messrs. Cammell Laird and Company for *Rodney*, the keel plates being laid for both ships on December 28, 1922. The machinery for the former vessel was supplied by Messrs. The Wallsend Slipway and Engineering Company, and for the latter by the shipbuilders. Messrs. Armstrong, Whitworth supplied the 16-inch gun mountings for both vessels, and the 6-inch gun mountings for *Nelson*. Messrs. Vickers Limited, supplied the 6-inch gun mountings for *Rodney*. H.M.S. *Nelson* was launched on September 3, 1925, and was completed on September 10, 1927. The corresponding dates for H.M.S. *Rodney* were December 17, 1925, and November 10, 1927.

The limiting gun caliber of 16-inch imposed by the Treaty brought into the British Navy a weapon of a size not hitherto in use. New designs of guns and mountings, therefore, had to be prepared. The economy in weight to be obtained by mounting the guns in triple instead of twin gun turrets







had been appreciated and utilized in the intermediate designs previously described, and in the design to which *Nelson* and *Rodney* were eventually built the triple turret was retained. Three of these turrets could be carried on the standard displacement, and the grouping of these three turrets forward (the center turret being superimposed), which had been accepted for the abandoned battle cruisers, was also followed in the *Nelson* and *Rodney*. With this grouping of the main armament is associated a minimum length of armoured citadel, so allowing the maximum thickness of armour to be fitted, whilst efficient protection to the main magazines could also be provided. The advantages so gained were considered to outweigh the loss of fire directly astern necessitated by the arrangement, which, in conjunction with the consequent displacement of the bridge structure to a position abaft mid-length, gives these vessels their very distinctive appearance. In order to avoid smoke interference with the controls, the boiler-rooms were placed abaft the engine-rooms, so enabling the funnel to be abaft the bridge structure.

The problem of weight reduction was attacked in two directions—firstly, the general design of the ship was so disposed as to give the maximum effectiveness to armour and armament within the smallest possible compass; secondly, by close attention to the details of structure, machinery, and fittings, to eliminate all non-essential parts, and to use the lightest materials appropriate to the work. By careful consideration of all details (involving the re-design of many of the Admiralty standard pattern fittings), and by tightening up the supervision of manufacture, a large measure of success was achieved. One of the most fruitful sources of weight economy was found in the employment of "D" quality steel in place of the "H.T." quality formerly used by the British Admiralty for the principal strength members of the hulls of heavy warships. A description of the development of this steel was given in a paper entitled "Steels for Shipbuilding," read by the writer before the Institution of Civil Engineers' Engineering Conference, 1928 (see *Engineering*, vol. cxxv, page 720). This steel has an ultimate tensile strength of from 37 to 43 tons per square inch, with a minimum elastic limit of 17 tons per square inch; about 6,500 tons of this steel was used in the hull structure of each ship, and by using it higher stresses were accepted, and consequent reduction of scantlings were made. The specified rolling limits were also amended to ensure that no plates or sections supplied should be above the weight ordered. Extensive use was made of aluminium and its alloys in the manufacture of minor fittings and of such articles as kit lockers, etc.

A number of different alloys were employed, some to proprietary formulæ and some of Admiralty specification, and experience so far has shown that in the main they have fulfilled their purpose. With further improvements in design and material, these alloys should have very many useful applications for fittings not exposed to the weather, nor subject to very rough usage. For outboard fittings, which are exposed to the corroding influences of sea air and spray, the results have so far been disappointing, and it is evident that further developments will be necessary before a really reliable light alloy for such work is obtained. The weather decks were sheathed with Douglas fir in lieu of the customary teak, the loss in wearing qualities and appearance being sacrificed for lightness. Plywood was largely used for dwarf and divisional bulkheads, not of importance for strength purposes. The heavier standard articles of furniture were re-designed and very considerably lighted, and here again plywood was extensively used. All wood fittings were fire-proofed by the "Oxylene" process.

It will be seen from Figs. 1-3, that the ships have a flush weather deck. This gives greater freeboard aft, and increases the space available for accommodation as compared with the more usual arrangement of breaking down one deck abaft the mainmast. Rather more than half the length of the weather deck is swept by the main armament, the total arcs of training of the forward, middle and after turrets being respectively 298, 330 and 250 deg. Special measures have been taken to protect the personnel and instruments on the bridges and control platforms from the blast of the after turret, which is very severe when the guns are trained aft at full elevation. The conning tower, with a revolving armoured director position, is placed immediately abaft

the main armament, and astern of this, again, rises the bridge structure. Fire-control systems have developed very greatly in recent years, and many difficulties have had to be overcome in providing the director towers with adequate support and the maximum possible clear view for their sights and rangefinders. The bridge and foremast have therefore coalesced into a very lofty and massive structure, bearing little resemblance to the arrangements previously adopted. This structure carries the directors for the 16-inch, 6-inch, and anti-aircraft guns, a bridge for the admiral and staff, and for torpedo control, a captain's bridge with signalling position and navigating platforms, and below these, various sea cabins and offices. The superstructure encircling the base of the bridge structure, the funnel and the main mast, accommodates the anti-aircraft and machine-guns, while the central space is occupied by the funnel, the boiler-room air intakes and various workshops. Four 36-inch searchlights are carried, one on either side of the funnel, and two on a platform on the mainmast. The boats are stowed amidships, between the mainmast and funnels, and are handled by a derrick operated by electro-hydraulic variable-speed gear winches. Placed above the weather deck, on the quarters, is the secondary armament of twelve 6-inch guns. Considerations similar to those advanced in the case of the main armament led to the grouping of these guns in three twin turrets on each side, the center turret being raised in order to fire over its neighbours. Eight of the twelve guns can thus be brought to bear right ahead and astern. The magazines and shell-rooms are in one block, and power-worked hoists supply the ammunition direct to the turrets.

It is claimed that this arrangement has great advantages over systems employing either a battery, with its limitations on elevation and arcs of training, or a series of guns in open deck mountings with shields, though the weight involved is, of course, greater than with the last-named arrangement. The magazines and shell-rooms for the main armament are grouped together around the revolving hoists, and in adjacent spaces are the hydraulic pumping machinery for operating the gun-mountings, ammunition-hoists and transporting gear, and also the CO_2 refrigerating units for cooling the magazines. Abaft the machinery spaces are similarly grouped the 6-inch magazines and shell-rooms, with their power-operated hoists and independent cooling plant.

The citadel is protected by a thick armour belt, extending from the foremost 16-inch turret to the after 6-inch turret. Over the same area extends an armoured deck for protection from plunging shell and aircraft bombs; the design of this deck received special consideration in view of probable developments in the efficiency of attack from aircraft, and the openings for ventilation, etc., in this deck have been kept to the smallest possible size and number. A special design of hatch for access through the armoured deck was evolved to provide ready means of escape, in which the operating gear is below, under protection. Underwater protection of the most efficient type, developed from a long series of experiments, has been embodied in the hull structure. Special investigations were made into the strength of the plating and framing of the double bottoms, of the hull in order to reduce the weight to a minimum. The stresses produced when docking received careful examination in view of the great concentrated weights of the main armament and protection. A system of longitudinal girders, with widely-spaced deep beams in conjunction with web frames, was adopted for the principal decks in order to utilize the maximum amount of material for longitudinal stresses, and so reduce the thickness of deck plating required for strength purposes. A considerable saving of weight was effected by this means.

Provision has been made for docking on three rows of blocks, the side docking keels extending from the forward end of the citadel to the after end of the forward engine room. The construction of the armoured deck required that the larger units of the engines and boilers should be on board before launching, and, with the deck armour and side armour on board, the weight to be carried on the groundways was considerably greater than had been usual for this class of ship. It was accordingly decided to launch the vessels on four sets of ways, instead of the usual two. An account of the investigation into loads and stresses and of the details of the launching arrangements was given in the paper which I read before this Institution in 1926.

The main propelling machinery of 45,000 shaft horsepower consists of Brown-Curtiss turbines, driving two propeller shafts through single-reduction gearing. This machinery is arranged in four engine-rooms pairs abreast, divided by a longitudinal bulkhead on in the middle line. The forward compartment of each pair contains the high-pressure ahead and the low-pressure ahead and astern turbines and the condenser, main circulating pumps, starting platform and main steam-control valves, and the after compartment contains the reduction gear and thrust-blocks. The complete set of machinery driving one shaft is thus entirely isolated from that of the other shaft. For use at low powers, cruising stages are fitted in the high-pressure turbines. Further aft in wing compartments are auxiliary engine-rooms, one on each side, containing the evaporating and distilling plant, auxiliary condenser, etc. Steam is supplied by eight small-tube type boilers fitted with superheaters and provided with forced-draught air supply, arranged two in each of four boiler-rooms, with central stokehold spaces. Six of the boilers are of 5,800 h.p. each, and two of 5,100 h.p. each. The boiler-rooms are arranged two abreast, similarly to the engine-rooms, with a longitudinal middle-line bulkhead, and can be similarly grouped as independent units on each side. Steam is generated at 250 pounds per square inch pressure, and supplied to the engines at 200 pounds per square inch superheated 150 deg. F. It will be seen from the above description that the sub-division of the machinery compartments has been carried out to a degree not previously attained in our large warships. This close sub-division has been followed throughout the ship.

Three hydraulic pumping units, driven by compound steam engines, are fitted, each in a separate watertight compartment under protection, for supplying power to the 16-inch mountings. Each unit has an output of 150 cub. ft. per minute at a pressure of 1,250 pounds per square inch. Six dynamos, with a total output of 1,800 kw. at 220 volts, are provided. Two are driven by Diesel engines, situated one each side abreast the boiler-rooms, and the remaining four by geared turbines, in well-separated compartments forward of the engine-rooms. This arrangement ensures that the least possible proportion of the supply of electric power to the ring mains shall be put out of action by damage in any one spot. Electrically-driven refrigerating plant, using CO_2 gas as the medium, consisting of seven compressor units of 60,000 B.T.U. capacity each, are installed. Two units are employed for the refrigerating chambers for meat and food storage, and for icemaking, and the remainder for magazine cooling. The anchors carried are three No. Byers plan 175-cwt, stockless pattern, with a chain cable equipment of 500 fathoms. The cables are made up with lugless joining shackles. Two bower and one sheet cable-holders are fitted. The former, with the middle-line capstan, are driven by an electro-hydraulic variable-speed gear installation, consisting of three separate power units, which can be used independently or cross-connected. This type of gear has the advantage of eliminating the very long run of steam and exhaust pipes which would have been required with the usual steam gear, and so avoiding the consequent heating of the spaces through which these pipes would pass. A special counting mechanism for indicating the length of cable run out at any instant has been fitted. The after capstan is driven by a Hele-Shaw type electro-hydraulic motor. Ten deck winches for working paravanes, embarking torpedoes, ammunition, stores and general utility purposes are provided. Six of these have electro-hydraulic Hele-Shaw type motors, and four have direct electric drive. The boat hoisting winches have variable-speed gear electro-hydraulic motors.

A balanced rudder is fitted, operated by a steering gear consisting of four hydraulic cylinders, with single-acting rams, arranged in opposed pairs at each end of the rudder crosshead. The rams are operated by oil under pressure supplied from three variable speed gear pumps operated by electric motors. Each pump with its motor is contained in a separate watertight compartment, and normally two pumps are in use at one time, the third being held as a stand-by pump, which can be brought quickly into operation in the event of failure of either or both of the other two, thus ensuring continuity of power supply to the steering gear. In case of complete failure of the supply of electric power, a variable-speed gear pump, driven by a steam engine, is fitted in the after engine-room. The connecting oil-pres-

sure pipes are arranged for quick change-over in the event of a breakdown of the whole of the main steering power units. With two of the main pumps in use, the gear is capable of moving the rudder from hard-over port to hard-over starboard, and *vice versa*, in 30 seconds, when the vessel is steaming at full speed ahead. This was the first steering gear of its kind to be designed for a British warship, and has proved highly satisfactory in service. About two hundred electric fans of various sizes are used for the general ventilation of the ship, in addition to special fans with brine coolers for the magazine cooling plant. Very great care was exercised in the arrangement of the ventilation, with satisfactory results. The engine-room ventilation is dealt with by four 30-inch exhaust and four 25-inch supply fans, and involved some difficult problems owing to the position of the engine-rooms below the bridge structure.

Turning now to the pumping and flooding arrangements, these are extensive and are designed to deal rapidly with possible damage, and the correction of heel and trim consequent thereon. For compartments other than those occupied by the main machinery, eleven electrically-driven centrifugal pumps, each with an output of 350 tons per hour, are provided. The pumps are of the submersible type and are self-priming. The main and auxiliary circulating pumps are arranged to be available for pumping out their respective compartments and the wings in the vicinity, and in addition a high-capacity steam-driven turbo-pump is fitted in the after boiler-room. For the saltwater service and for dealing with normal drainage and bilge water, nine 50-ton electrically-driven pumps are fitted in those portions of the ship outside the machinery spaces, whilst the fire and bilge steam pumps carry out similar functions inside these spaces.

An exhaustive series of steam trials was carried out on each ship after completion following the usual basin trial of the main engines, and the preliminary run at sea, two complete groups of trials were carried out, one with the vessel at about standard displacement, and the other at her deep draught. For each of the two groups of trials, the engines were worked at various powers and runs on the measured mile, at West Looe, Cornwall, were made at each of these powers. During the trial at standard displacement continuous records were made of the oil-fuel and water consumptions. *Nelson's* speed at full power at standard displacement was 23.55 knots for 46,000 S.H.P., with a fuel consumption of 0.789 lb. per shaft horse-power-hour, while in the deep condition the speed was 23.05 knots for 45,800 shaft horse-power. *Rodney's* maximum speed under similar conditions was 23.8 knots. In addition, steering and circle trials, and stopping, starting, reversing and astern trials were carried out as usual in Admiralty practice. The diameter of the turning circle at full speed was 670 yards, or rather less than three ship-lengths.

CURRENT ARTICLES AND BOOKS

"Modern Antiaircraft," by G. M. Wells, in *Army Ordnance* for March-April, 1929.

"Current Naval Problems," by Captain B. H. Ramsay, R.N. in *The Journal of the Royal Artillery* for April.

The following articles are found in the *Transactions of the North-East Coast Institution of Engineers and Shipbuilders*, Vol. 44:

Bruhn, Dr. J., "The Safety of Ships Against Capsizing."

Visker, S. G., "Application of High Pressures to Reciprocating Marine Steam Engine."

Calderwood, J., "Diesel Engine Drive for Generators and other Marine Auxiliary Machinery on Board Ship."

Sartoris-Watson, The Mitchell Crankless Engine."

NOTES ON INTERNATIONAL AFFAIRS

From April 4 to May 3

Prepared by Professor Allan Westcott, U. S. Naval Academy

ARMS LIMITATION CONFERENCE

American Naval Proposals.—The meeting of the Preparatory Committee for a Disarmament Conference, which from its opening on April 15 at Geneva had been doing little but mark time, was reanimated on April 22 by the very definite proposals made by the chief American delegate, Ambassador Hugh Gibson, regarding methods of naval limitation. Insisting on practical methods that would give some promise of tangible results, Mr. Gibson in the course of his speech made two offers or suggestions: (1) that a way toward naval limitation agreement might be found by working out a common formula for estimating naval values, which would take into account not only tonnage but other important factors such as speed, armament, age, cruising radius, etc.; (2) that the United States was willing to accept as a basis for discussion the French compromise proposal by which nations, after being allowed a fixed total tonnage, should be allowed a degree of freedom in allocating this among various types or catagories of ships. Mr. Gibson, stipulated, however, that this method would be acceptable only on condition that no type remained wholly unrestricted.

The American proposals were warmly received, and were very promptly given general approval by Premier Baldwin and the British cabinet, who saw in the reopening of naval discussions a welcome aid to the Conservative government in the approaching Parliamentary elections. It appeared certain, however, that the naval question would not be actually tackled in the April conference, but would be left for a subsequent meeting next autumn, which would give opportunity in the meantime for conferences among the five chief naval powers.

Mr. Gibson's Speech.—Mr. Gibson's address began with an appeal for concessions on the part of each nation as the only means of progress. In line with this he said that while the United States had previously insisted on limitation by tonnage and by types, the American delegates were willing to consider the French compromise proposal allowing some freedom in transferring tonnage from one category to another. Then followed his proposal of a "method of measuring naval values:"

> My government is disposed to give full and friendly consideration to any supplementary methods of limitation which may be calculated to make our proposals, the French thesis or any other acceptable to other powers, and, if such a course appears desirable, my government will be prepared to give consideration to a method of estimating equivalent naval values which takes account of other factors than displacement tonnage alone. In order to arrive at a basis of comparison in the case of categories in which there are marked variations as to unit characteristics, it might be desirable in arriving at a formula for estimating equivalent tonnage to consider certain factors which produce these variations, such as age of unit, displacement, and caliber of guns. My government has given careful consideration to various methods of comparison and the American delegation will be in a position to discuss the subject whenever it comes before the commission.
>
> In alluding briefly to these possible methods I desire to lay special emphasis on the fact that for us the essential thing is the achievement of substantial results. Methods are of secondary importance.

Following this, Mr. Gibson declared that the United States was ready to agree to a

plan for limitation at even lower levels which would still maintain the relative status of the chief naval powers as established in existing treaties. He suggested scrapping the term *limitation* in favor of *reduction*, as a more positive word. (This change was later avoided when it was brought up in connection with land armaments by the Soviet delegate.) Mr. Gibson insisted further that limitation or reduction must include all types:

My government believes that there can be no complete and effective limitation of armament unless all classes of war vessels, including cruisers, destroyers and submarines, are limited. It could not agree to any method which would result in leaving any class of combatant vessels unrestricted. In its reply, under date of September 28, 1928, to communications from the British and French Governments concerning an understanding reached between them as a basis of naval limitation, my government pointed out that this understanding applied to only one type of cruiser and one type of submarine, and would leave totally unlimited a large class of effective fighting units. This note also called attention to the American position at the Geneva naval conference and the fact that a proposal for general reduction was urged by the American delegation.

The willingness of my government, I may even say its eagerness, to go to low levels is based upon the fundamental belief that naval needs are relative, namely, that what we may require for our defense depends chiefly upon the size of the navies maintained by others. Aside from the signatories of the Washington Treaty there is no conceivable combination of naval powers which could threaten the safety of any of the principal naval powers. What justification can there be for the powers which lead in the respective classes of naval vessels to sanction further building programs in those classes? In the case of the United States we have already expressed our willingness to agree on a basis that would mean a substantial reduction of our present destroyer and submarine types. In the case of cruisers, it is only possession by others of greatly superior strength in this class which has led to the adoption of the present building program.

THE MEASUREMENT FORMULA.—As reported in the New York *Times* of April 23, Admiral Hilary P. Jones explained the naval formula referred to by Mr. Gibson as follows:

The method or formula which the American naval staff has worked out, is explained by Admiral Jones as follows: A new 10,000-ton cruiser armed with 8-inch guns would be taken as the standard and receive a rating of, say, 10,000 tons "equivalent tonnage." In other words, it is an arbitrary index number with "value of weights" expressed in equivalent and not displacement tonnage.

Then the value of any other cruiser would be estimated on the basis of its relative age, displacement and gun power, allowance being made according to a determined percentage when any one of these three factors differed from the standard. Thus the equivalent tonnage of a new 6,000-ton cruiser with 6-inch guns would benefit by reduction both for displacement and gun power so that its equivalent tonnage would be less than 6,000, and the same vessel, if old or obsolete, would get an even lower equivalent tonnage rating.

By adding the equivalent tonnage for each cruiser and each navy, one would get the total existing equivalent tonnage, which might be lower or higher than the displacement tonnage. Reduction then would be based on the total equivalent tonnage, as representing real value, instead of on displacement tonnage, which represents only one factor in value.

The complicated technical part of the formula consists in determining what factors to include and how much percentage to allow for each. It is stressed in American quarters that though the formula includes only three factors, the Americans are willing to consider adding others, such as speed, cruising radius, number of cannon, etc.

AMERICAN CONCESSION ON LAND FORCES.—In accordance with a promise made in his speech on naval limitation, Mr. Gibson on April 26 put forth in behalf of his government a definite concession in the matter of army effectives, withdrawing objections to the view, held especially by France, that trained reserves should not be counted as "army effectives" in any scheme of reduction. Thus he went over to the concession made by England in connection with the abortive Anglo-French Naval Agreement of last year. In doing so, Mr. Gibson called on other nations to make similar sacrifices. His concession was hailed by the French delegates, and also by the Japanese, as "a way out of many difficulties;" but as the conference went on little disposition was manifested on the part of the European delegates to offer corresponding concessions for the common cause.

AMERICAN SUGGESTIONS CRITICISED.—In the general enthusiasm over the American proposals at Geneva, the note of criticism was not conspicuous. However, Baron Sakamoto, naval member of the Japanese House of Peers, "admitted frankly" that Japan would not be willing to extend the 5-5-3 ratio to all classes of naval vessels, and especially to cruisers. In the United States, Chairman Britten of the House Naval Committee expressed a feeling about

the activities at Geneva which seemed to be somewhat prevalent in Congress.

Chairman Britten declared that Mr. Gibson's suggestion that trained army reserves be not included in computing military strength was equivalent to agreeing that ships in reserve, but ready to fight, should not be included in establishing naval strength.

"This is the second time in ten days that Gibson has played directly into the hands of British and French diplomacy," Mr. Britten said, "the first being his proposal to accept the British category theory for measuring the naval strength of the leading powers, instead of by global tonnage as was the case in the Washington conference."

"I have been unable to learn," Mr. Britten continued, "that the complete surrender of American principles of the past now advanced by Ambassador Gibson has been approved by either the Navy General Board or the General Staff of the army. It will be interesting to learn by what authority Gibson is proposing to negotiate European treaties.

"American world position must not be used to deceive the weaker nations into accepting a make-believe disarmament agreement which will never be ratified by the United States. The present meeting in Geneva is the sixth session of the Disarmament Preparatory Commission, extending over a period of years.

"Nothing has come of the past meetings and the present one will end in the usual fiasco. As an exhaust chamber for the smaller nations it has been a great success.

"As a justification for the maintenance by England and France of large military and naval establishments, it is a howling success. It is quite evident that our representative is playing with those in power in Europe, but the less we have to do with diplomatic log-rolling and secret agreements over there, the better. We are too credulous and too young at this game of deception and intrigue."

INTERNATIONAL LAW CODE.—The League of Nations Secretariat on April 11 received from the United States State Department, in answer to a questionnaire sent out on codification of international law, two long memoranda on the topics of nationality and of territorial waters, with promise of a third relating to the responsibility of states for injuries to foreigners in their territory. The contents of these were not made public, but the response made by the United States was taken as giving assurance that it would participate in the conference which the league has called for next year to attempt a codification of international law on the basis of the replies to its questionnaire. A second meeting of the Preparatory Commission for this conference was set to meet in May.

REPARATIONS CONFERENCE

BREAKDOWN THREATENED.—The return of the German delegate Dr. Schacht from Berlin on May 2, and news on May 3 that the American chairman, Mr. Owen D. Young, had made a new compromise proposal for annual payments averaging somewhere under $500,000,000, offered apparently the last hope for a successful outcome of the Conference of Experts on the Reparations Question which had been in session at Paris, for the preceding ten weeks.

The plans and expectations of the conference suffered a complete upset when Dr. Schacht on April 17 at last presented a definite statement of what Germany was willing to pay, but in terms hopelessly below the demands of the debtor powers. His memorandum made two alternative offers: (1) a flat annuity for thirty-seven years of 1,650,000,000 marks ($396,000,000) with an estimated present value of about $6,360,000,000, to be paid "unconditionally" provided Germany was granted among other things "access to overseas raw materials," preferential tariff treatment, and economic contact with the detached province of East Prussia; (2) payment of the same amount, over the same period, but subject to the protection of the "transfer clause" which would relieve Germany from meeting her annuities in the event of a financial crisis.

This German offer was 200,000,000 marks below the lowest annuity proposed by the creditor states, and about 550,000,000 below their estimate of the average payments Germany should make over fifty-eight years. In other words Germany offered fifteen billion dollars over thirty-seven years, and was asked for twenty-eight billion over fifty-eight years. The German proposal furthermore—at least the second and only

practical one—made no provision for the unconditional payments on which was based the whole conference plan for converting a certain part of the debt into negotiable bonds. Up to the close of April, Germany made no offer of better terms, though faced clearly with the alternative of return to the payment of 2,500,000,000 marks under the Dawes Plan, with continued military occupation and political strain.

DRAFTING OF REPORT.—In spite of the setback resulting from the German attitude, the Conference was expected to continue in session at least until the middle of May, occupying itself with the drafting of a detailed report, which by its evidence of work accomplished would prove the conference not altogether fruitless. It was stated that this report would give the conclusions of the committee regarding Germany's economic progress, capacity to pay, scope of the proposed international bank, and advantages of the new plan of payments over the Dawes plan. So far as completed, it was said to be an admirable report, acceptable to the German delegates as well as the rest, and lacking only the amount Germany would pay.

UNITED STATES

ARBITRATION OF "I'M ALONE" DISPUTE.—On April 26 the correspondence between the United States and Canada regarding the sinking of the rum-runner *I'm Alone* was made public, and it was announced that Canada had agreed to the American proposal that the case be submitted to arbitration, as provided for in Art. 4 of the Anglo-American Ship Liquor Treaty. This specifies that claims "shall be referred for the consideration of two persons," one of whom shall be nominated by each nation. If no agreement is thus reached, it will be referred to a claims commission consisting of an American and a Canadian and an additional neutral member.

The correspondence, while notably cordial in tone, showed wide disagreement both as to the facts of the case and the points of law involved. There was uncertainty as to whether the *I'm Alone* when first approached was 10.8 miles from shore, as stated by the Coast Guard officers, or from 14.2 to 15 miles, as stated by her captain. Canada argued that the "doctrine of hot pursuit" outside territorial waters was not applicable when the pursuit began outside the old three-mile limit; that in this case the pursuit was not continuous; and that the subsequent firing and sinking were uncalled for. The United States, on the other hand, argued that the legality of pursuit from within one hour's steaming distance was implied in the Ship Liquor Treaty, that the pursuit was continuous by units under one command, and that force was used only as a last resort.

MEXICO

REVOLT CRUSHED.—The backbone of the revolutionary movement in Mexico, carried on during the past two months primarily by a group of discontented military officers, was broken by the crushing defeat administered to the rebels by the government forces at Jiminez on April 2, and the slaughter at La Reforma on the next day. At the close of April some of the rebel leaders crossed into the United States, and others, as at Nogala on April 30 and Agua Prita on May 1, formally surrendered to the federal authorities. On May 3, Gen. José Gonzalo Escobar, the rebel commander-in-chief who was elected provisional president on April 8, was still at large, but was expected to seek refuge outside Mexico. In the two months of operations the federal army remained loyal and was ably led. The government superiority in aircraft especially put the rebellion under a fatal handicap. It appeared clear that air control will play a decisive part in future Latin-American uprisings.

During the Mexican hostilities, an American negro soldier was shot near Naco, Arizona, in a clash with Mexican rebels attempting to smuggle munitions into Mexico. In the same vicinity on April 6, bombs were dropped by Mexican aircraft on the American side of the line, leading to the dispatch of eighteen U. S. Army airplanes for border patrol with orders to fire on any Mexican craft flying over American territory.

GREAT BRITAIN

BRITISH ELECTIONS.—An interesting development of the hot three-party fight of Conservatives, Liberals, and Labor before the May Parliamentary elections in England

was the bitter attack on the Balfour debt settlement principle made in the House of Commons on April 16 by Former Chancellor of the Exchequer Philip Snowden of the Labor party. He criticised the debt settlements made by the Conservative government and declared that if the Labor party went into power it reserved the right to repudiate the "infamous Balfour principle"—that England would demand from the allied debtors only enough to cover her payments to the United States. His speech created a sensation, for it apparently threatened the permanence of previous and pending debt agreements. Subsequently, speaking in Parliament, leader Ramsay Macdonald of the Labor Party declared that his party would hold to all existing agreements, until changed by mutual consent.

BRITISH BUDGET.—Mr. Snowden's attack on the debt settlement occurred during the discussion in Parliament of Chancellor of the Exchequer Churchill's budget speech on April 15. The new British budget estimates the revenues at $4,133,000,000 and expenditures at $4,112,000,000, leaving a surplus of $21,000,000. The most significant item, taken as the chief Conservative bid for support in the May elections, was the immediate and empire-wide abolition of the tax on tea. It was figured that this would reduce revenues by $30,000,000, but would effect an immediate reduction of 8 cents a pound to the consumer.

GEN. DAWES AMBASSADOR TO ENGLAND.—On April 10 it was announced that former Vice-President Charles G. Dawes had accepted from President Hoover an appointment as United States Ambassador at the Court of St. James to succeed Mr. Alanson B. Houghton. His appointment was warmly acclaimed in the British press. At the close of April Mr. Dawes had completed his work as chairman of the Dominican Budget Commission and sailed thence to New York.

EUROPEAN POLITICS

GERMANY EXCLUDES TROTSKY.—The German Cabinet in April definitely refused Leon Trotsky's request for domicile in Germany. The decision was generally approved by the press, with the exception of a few Socialist and liberal papers, and even by the German Communists, who were influenced by the hostility toward Trotsky on the part of the Stahlin régime in Russia.

POLISH CABINET REORGANIZED.—Dictator Josef Pilsudski of Poland reorganized his cabinet in April on a more distinctly military basis. Major Kasimir Switalski, wartime officer of Pilsudski's Polish Legion, became prime minister, and three colonels of Pilsudski's personal following were given prominent cabinet posts.

NEW AUSTRIAN MINISTRY.—On April 30, twenty-seven days after the resignation of Chancellor Seipel and his cabinet, a new ministry was organized in Austria under Dr. Ernst Streeruwitz of the conservative Christian Socialist party. The new cabinet is viewed with disfavor by the radical Socialists because of Dr. Streeruwitz's association with the Austrian fascist organization known as the *Heimwehr*. He is also an ardent advocate of the *Anschlusz*, or union with Germany.

FAR EAST

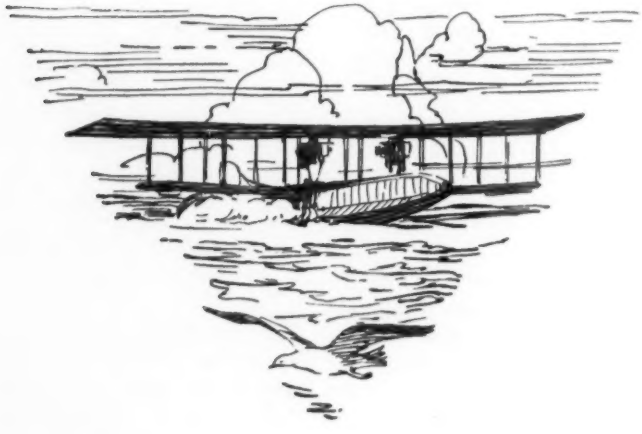
HANKOW REBELS DEFEATED.—Early in April the revolt against the Nanking government in China centering in the Hankow region suffered a sudden and almost complete collapse. On April 4 the fortifications around Hankow were abandoned before the advance of President Chiang Kai-shek's forces, and the rebel leaders either retreated or went over to the government. As in the case of the sudden ending of the revolt at Canton, judicious use of Nationalist funds facilitated the easy victory at Hankow.

NANKING RULE THREATENED.—Despite the defeat of the Hankow rebels, President Chiang on April 10 declared his intention to resign upon his return to Nanking, holding himself responsible for not having prevented the uprising. Though Chiang's threat of resignation was not carried out, events during April revealed the increasing difficulties confronting the Nanking régime through the disaffection of Marshal Feng Yu-hsiang. Feng apparently regarded it as a breach of faith on the part of the Nan-

king leaders that both the Hankow and Shantung provinces were not put under his control. It was proposed that upon the evacuation of Shantung by the Japanese, Feng's army of 40,000 in that province should occupy Tsinan-fu and the inland stretch of 125 miles of railway leading to the coast, while President Chiang would send troops to control Tsingtao and the coastal region. This compromise offer was refused by Feng, and the evacuation of Tsinan-fu by the Japanese was consequently postponed at the request of Nanking—a delay which did not serve to raise President Chiang in popular favor. Feng's policy, it is said, is to avoid open hostilities at least until late summer, when the sentiment against the present authorities will have risen to a point where it may be construed as a mandate for him to take control. Meantime he has received overtures from his former enemy, Dictator Chang Hsueh-liang of Manchuria, who now declares the Nationalist movement betrayed by the leaders at Nanking.

JAPANESE EVACUATION OF SHANTUNG.—As stated above, the evacuation of Shantung by the Japanese, scheduled to begin on April 15 and to be completed by May 25, was delayed at the request of Nanking. Most of the Japanese troops and munitions, however, had already been concentrated at Tsing-tau, and the province outside the chief cities was left in a state of anarchy. On May 1, it was stated from Tokio that the Japanese would complete evacuation by May 25 as originally planned, arrangements having been completed for the control of Tsinan-fu by Nanking troops.

In the Chefoo region, Marshal Chang Chung-chang's forces occupying Chefoo suffered a severe defeat on the night of April 21-22 in their siege of the Nationalists at Ninghaichow. Chang's forces were driven from Chefoo, and on May 1 it was reported that Chang had attempted to take refuge at Port Arthur, but had been prevented from landing by the Japanese authorities.



BOOK DEPARTMENT

Save money by placing your order for all books, whether professional or not, with the Institute Book Department, which will supply any obtainable naval, professional, or scientific book, and save you not only money but also much inconvenience by having one source of supply. Address Secretary-Treasurer, U. S. Naval Institute, Annapolis Maryland.

THE ORIGINS OF THE WORLD WAR. By Sidney B. Fay, Professor of Modern European History in Smith College. New York: The Macmillan Company, 1928, 2 vols., $9.00.

REVIEWED BY CAPTAIN J. K. TAUSSIG, U. S. NAVY

Every naval officer should read the two volumes of this remarkable work. Whether or not one agrees entirely with the author's conclusions or believes that all the available factors and events that may have had a direct or indirect bearing on the causes of the Great War have been considered, I believe that every fair-minded reader will agree that these volumes represent an amount of meticulous research, unbiased consideration, and careful compilation that mark the volumes as a monumental work of the greatest historical importance.

Not only does one find a great store of diplomatic history, but also, and to a degree that aids much in the pleasurable reading, a keen insight into the character and characteristics of the rulers, statesmen, diplomats, and military authorities whose words and actions had at least some bearing on the trend of events that led finally to the conflict.

It is possible that, in view of the fact that Professor Fay does not find Germany solely responsible for bringing on the war, many may think him pro-German in his views. But as we read on through the book, we find ample testimony to show that the intricate combination of circumstances finally leading up to war was not brought about by any one nation but by a maze of combinations that required intensive research and study to reveal and elucidate.

In the first chapter, which the author terms "An Introduction," we find a complete analysis, in a very general form, of the immediate and underlying causes of the Great War.

The author shows that all the early state publications issued by the various powers, known as the Red, Blue, Yellow Books, etc., were framed as propaganda; that many of these books, while giving partial correspondence, did not give the whole of it; that very few of them told the whole truth and nothing but the truth; and some of them even made changes in original documents to suit their efforts in attempting to place the blame for starting the war on another country.

It is pointed out that for this reason it was impracticable to judge the direct causes of the war from these documents. Particularly is attention called to the fact that in framing the peace treaty the Commission on the Responsibility of the Authors of the War, presided over by Mr. Lansing, had no German representative present, and that the German White Book, which had been issued, did not receive the attention which it warranted. This was later admitted by one of the members of the commission.

The author then proceeds to discuss later information which has been issued by the

various nations concerned and which, being much more complete than the early books, places a somewhat different aspect on the whole matter. He also discusses the large number of reviews, memoirs, and recollections of various high personalities, and gives an excellent, brief review of these books, stating wherein they are prejudiced or contain errors.

Since the book is an analysis of the origins of the World War, it is quite natural that the author should acquire very definite ideas as to wherein the responsibilities lie. For example, he states: "Count Berchtold, who more than anyone else was responsible for the World War, has long kept silent except for a few short and tardy exculpatory articles, but his memoirs are now announced for early publication." Of M. Poincaré's part, the author states: "He (Poincaré) believed a European War inevitable; in tightening the Entente and in making promises to Russia he did, in fact, tend to make it inevitable. Herein lies his responsibility."

In writing of the responsibility of the Servian government in the assassination of the Austrian archduke, he points out that Ljuba Jovanovitch, who was minister of education in 1914, in his book titled *The Blood of Slavdom,* describes how some of the cabinet were aware of the Sarajevo plot for nearly a month, and yet, in spite of this guilty knowledge, took no effective steps to arrest the conspirators or to warn the Austrian authorities of the impending danger. Other revelations which followed placed the Austro-Servian conflict in a new light, which, if true, greatly increased the burden of Servia's share of responsibility. Of the British part in starting the war, we find a number of interesting statements of particular significance to naval officers, in that he touches on the questions of sea power and limitation of naval armaments. The author quotes Sir Edward Grey's statement made behind closed doors to the Dominion premiers in May, 1911: "What really determines the foreign policy of this country is the question of sea power."

It is evident that the author considers the German refusal to limit naval armaments when proposed to be one of the underlying causes of the war, as he calls it "Germany's folly" not to have accepted the British proposal.

Much stress is laid on Viscount Grey's book *Twenty-five Years, 1892-1916,* which the author considers the best of the memoirs that have been written. However, he points out that Sir Edward, like practically all the statesmen on both sides, was suspicious of other countries, and that this suspicion was one of the causes that finally brought about the war. He says:

> Though Germany's actions gave much ground for suspicion, as we shall see, this particular suspicion of Sir Edward Grey's was wholly incorrect. But the fact that he harbored it must be accounted one of the immediate causes of the War, because it contributed to the failure of Germany's eleventh hour effort to prevent a general European conflagration.

In discussing the underlying causes of the war in a general way the author states that they can be conveniently grouped under five heads: (a) the system of secret alliances; (b) militarism; (c) nationalism; (d) economic imperialism; (e) the newspaper press.

Of particular interest to us is the discussion under militarism, in which the author, while not giving a definition of the term, which he states is often used vaguely, considers it to include,

> at least two definite conceptions. First, the dangerous and burdensome mechanism of great standing armies and large navies, with the attendant evils of espionage, suspicion, fear, and hatred. Second, the existence of a powerful class of military and naval officers, headed by the General Staff, who tend to dominate, especially at a time of political crisis, over the civilian authorities.

In discussing the effect of army and navy officers, he states that: "Quite aside from any personal motives, the military officers in all countries had a high sense of national honor and patriotic duty. It was their supreme duty to be ready at any moment to protect the state by force of arms." Yet at the same time he states the fallacious argument which is usually given by pacifists: "To these professional fighters war held out the prospect of quick promotion and great distinction." I think that he ignores the fact that the professional fighters who carry enough weight with the civilian authorities in regard to the matter of whether or not there shall be war have already reached the pinnacle of promotion and are usually officers of distinction. This statement of the author is one of the few that he makes for which I believe there is

no foundation in fact in respect to military officers in general.

The author makes the statement:

> But a general mobilization according to prevailing military opinion actually did make war inevitable. It was a process virtually impossible to hold when once begun. This was one of the greatest evils of militarism. It is always at a crisis, precisely when it is most difficult for diplomats to keep their heads clear and their hands free, that militarist leaders exert their influence to hasten decisions for war or get the upper hand altogether.

In summing up the influence of militarism upon the civilian authorities, he holds that it was "a serious matter in the three eastern monarchies of Germany, Austria, and Russia. It was much less in France and virtually non-existent in England, where civilian ministers were ordinarily in charge of the army and navy."

In some of the examples cited to show the influence of militarism in causing the war, it would seem that the actions of the military and naval leaders with respect to preparations were not in themselves causes, but were in reality effects due to the actions of the statesmen and diplomats. The military and naval officers prepared for eventualities which were being forced by their governments and which, if not foreseen by them, would have placed them in the rôle of incompetents and made them the recipients of unjust censure, when the war eventually arrived.

The discussion under the effect of the newspaper press is most interesting, as the author states: "Another underlying cause of the war was the poisoning of public opinion by the newspaper press in all of the great countries." He gives a specific example of this in the press feud carried on between Austria and Servia in the weeks following the murder of the Archduke Ferdinand. He states:

> Here was a case in which the governments of both countries, instead of apologizing for their press or trying to restrain it, deliberately allowed the newspapers to incite public opinion and fire it to an indignation and enthusiasm for war. It would perhaps be too much to say that had it not been for this Austria-Servian newspaper feud the war might have been averted, but it is true that the violence of the Servian press was one of the determining factors which led Count Tisza to change his opinion and to accept war with Servia, whereas at first he had been stubbornly opposed to it; and without his consent Count Berchtold and the militarists could not have made war on Servia.

The author takes up the detailed history of the subject with a discussion of the secret alliances beginning in 1871, which was the date of the end of the Franco-Prussian War. By this war Germany was transformed into a strong, unified empire and became one of the predominating nations of Europe.

One may doubt as to whether the underlying causes of the Great War really began in 1871 with the signing of the treaty that ended the Franco-Prussian War. Were not some of the results of the Napoleonic wars still felt throughout Europe, causing race and national hatreds and jealousies of which the French-German situation was only one? The balance of power so necessary to stability, and the settlement of which was so essential for peace, was lacking throughout Europe prior to the Franco-Prussian War, which seemed only to add to the previous disquietude.

However, it is interesting to note that the author apparently considers that clause of the treaty ending the Franco-Prussian War, which gave to Germany Alsace and Lorraine, as the main reason for the disturbed conditions in Europe which followed up to the beginning of the Great War. He states, in referring to the annexation of Alsace-Lorraine by Germany: "History shows that it was worse than a crime. It was a blunder."

In regard to Bismarck and this Alsace-Lorraine matter, the author states: "Bismarck had mutilated a living body and the wound would not heal; it was to remain an awful, open sore, threatening the peace of Europe for forty years."

It seems that Bismarck did not appreciate that the affront to France would be remembered for so long, it always being his opinion that the bitterness caused by this separation of Alsace and Lorraine would soon be forgotten. As the author states:

> Could Bismarck have peered into the future and seen how French pride and French bitterness over the loss of Alsace-Lorraine was to vitiate every effort at permanently satisfactory relations between Germany and France—could he have foreseen how by its direct and still more its indirect consequence it was to be one of the main underlying causes of the World War—perhaps then he would have acted otherwise in 1871.

In fact, it is apparent that the author considers the continued threat of France for revenge for the loss of these provinces

as the inspiration which caused Bismarck to make the secret alliances with other nations. He shows that while all of these secret alliances were known, their contents were not known, and it was for this reason that suspicion was always evident on the part of those nations which were not parties to the alliances. However, it seems evident that in all these alliances Bismarck's idea was defensive rather than offensive. Indeed, the author concedes that. He says:

> Bismarck's policy of a demarkation of interests between Austria and Russia and the pressure he put upon each helped to preserve the peace of Europe, even during the violent Balkan crisis that arose through the union of the two Bulgarias in September, 1885.

And again:

> Such was the success of one set of alliances establishing the domination of the Eastern Empires by which Bismarck for nearly a score of years conjured away an open clash between Austria and Russia in the Balkans, preserved almost unbroken the good relations of Germany with her powerful neighbors to the south and east, and thereby lessened the danger from the west.

And again:

> Thus in the period 1871 to 1890 the peace of Europe was secured by the domination of the Eastern Empires and by the system of genuinely defensive alliances which Bismarck had built up, though during the last three years the system was somewhat less secure. No power cared to risk a war against Germany's overwhelming military force, supported and insured as it was by the secret alliances which had brought Austria, Russia, Italy, Roumania, and even England more or less into coöperation with Germany.

We see here a case where military power evidently prevented war, as France in her isolation could not dare to undertake a war of revenge under these conditions.

Professor Fay then points out how, with the dismissal of Bismarck, things began to take a different turn and the peace of Europe was not so firmly established.

The limits of this review will not permit of further details of discussion. The author, in a fascinating style that forces conviction and interest, carries the reader on and on through the system of secret alliances that resulted in the formation of the Triple Alliance, and then the Triple Entente which was organized in opposition; through the maze of Balkan problems that seemed not to have a solution other than by a resort to arms. Passed before us in accurate detail are accounts of Italy's dubious loyalty to her allies, the Morocco crisis of 1905, the German fear of encirclement, the Anglo-German naval rivalry, the Agadir crisis, and many other important incidents and events. There is a lengthy discussion of the Liman von Sanders affair, which it seemed at one time would be the spark to set off the fuel which had been accumulating for so many years, but which was settled diplomatically by both sides making concessions.

Professor Fay cites the settlement of the Liman von Sanders affair without recourse to arms as an evidence that war was not inevitable. It is doubtful if all readers will agree with this conclusion. Relations between the nations concerned were gradually becoming more and more intricate, complex, and tense; and differences of ideas and viewpoints were becoming more and more manifest. The Liman von Sanders affair was so simple in comparison with some of the other problems it cannot be concluded that its settlement by diplomacy made it possible for the other differences to be likewise settled. In fact, as one reads through the book, he finds creeping on him a growing conviction that war had to come sooner or later, and the only requirement for lighting the conflagration was some such spark as eventually occurred at Sarajevo.

Among the best features of Professor Fay's book is the insight given to the characters and characteristics of the chief actors, and the great influence of personalities in the conduct of world affairs. We also see how much more effective, as a rule, were personal contacts in settling differences and in making agreements, than were written instruments. There pass before the reader at various times such world figures as the German Emperor and Russian Czar, Bismarck, Bülow, Tirpitz, Bethmann-Hollweg, Poincaré, Delcassé, Cambon, Hötzendorf, Berchtold, the Archduke Ferdinand, Metternich, Sazonov and many another.

Throughout the reading, one is impressed with the wide geographical distribution of the countries, lands, and seas, over which differences occur—practically all over the world excepting in our own Western Hemisphere. In reflection one cannot help but feel how fortunate has been the United States in having a Monroe Doctrine and in having a policy of "No entangling alliances," which together have kept this country free of the intrigues, ambitions, and

conflicts which have habitually confronted the European nations. And another thought that perhaps has a lesson for us with respect to Europe's and our own present-day problems of reparations, debt settlements, and boundary establishments, is the necessity for immediate adjustments that will not permit rancor and the desire for revenge to continue through the years.

An account of the events leading up to the assassination of the Archduke Franz Ferdinand is followed by discussions as to the responsibility for this crime, the Austrian ultimatum, the Serbian reply, and the several proposals for preserving the peace. All of these events are recounted with a thoroughness of facts and in a convincing and gripping manner which carry the reader through the many interesting pages with a feeling that here he is having set before him, in concise form, the truths which had been difficult, if not impossible, to find in the many books which had previously dealt with these same events.

Final chapters are devoted to the Russian and other mobilizations, which were soon followed by the various declarations of war, and to a statement of the author's conclusions. Professor Fay finds that none of the nations concerned really wanted a general European war, that all of them were to a greater or lesser degree responsible, but that to Austria, more than to any other country, belongs the greatest blame for bringing on the conflict. He points out that, although the nations did not want the war, it occurred nevertheless because the political and military leaders did certain things which they should not have done, and failed to do other things which they should have done. This shows that in the final analysis the war was brought on by the inherent weaknesses of human nature. These frailities are still with us. Until they are eradicated we must lay our course with respect to preparedness on the assumption that future wars are not only possible, but are probable.

OUR NAVY AND THE WEST INDIAN PIRATES. By Gardner W. Allen. Salem, Mass. Essex Institute. 1929.

REVIEWED BY REAR ADMIRAL ELLIOT SNOW (CC) U. S. NAVY (RETIRED)

Those readers of the U. S. Naval Institute PROCEEDINGS whose attention perchance was caught by a short account of "A Visit to Lafitte," which appeared as an item of the Secretary's Notes in the June, 1928, number, and who may now wish to learn more fully of the operations of our Navy in suppressing piracy and promoting safety to ocean-borne traffic in the West Indies, should read a recent excellent compilation by Dr. Gardner W. Allen.

Our Navy and the West Indian Pirates, under which caption Dr. Allen's latest contribution to United States naval history appears, is one of the publications of the Essex Institute of Salem, Massachusetts. The book is based very largely on material collected by the late Rear Admiral Caspar F. Goodrich, U. S. Navy, to whose memory the record is dedicated.

Those officers of the naval service and the many friends in civil life to whom Admiral Goodrich endeared himself, particularly those he made during his last tour of active duty as liaison officer of the United States Navy at Princeton University, will greatly appreciate the dedication, and will with understanding appraise the correctness, courtesy, and modesty of the closing words of the author's preface:

> After long and distinguished service in the Navy, Admiral Goodrich died December 26, 1925. He was deeply interested in the subject here presented, to which he devoted much time and labor in unearthing the original sources. His earnest wish was almost a command and without it this little book would never have been written.

Dr. Allen has also drawn upon the collections of the Massachusetts Historical Society, the Boston Public Library, the Boston Athenaeum, and the Harvard College Library.

Another very rich vein of information to mine, at least for the history of the Baratarian pirates and their leader—"The Napoleon of the Gulf"—Jean Lafitte, is the *Louisiana Historical Quarterly.* The brief and guarded way in which the author refers to the assistance given by Jean Lafitte and his followers to General Jackson at the Battle of New Orleans, casting a doubt as it does to the value of Lafitte's performance on that occasion, will doubtless come as a surprise to a part of the readers of Dr. Allen's account.

A quotation from the introduction, written by Admiral Goodrich, will serve to show the value to the service of the reading of

this little book and furnish to naval officers and to our wise legislators, who support the Navy, one more cogent argument to use in combating the pernicious doctrines of "foolish patriots—pacifists."

> It is a patriotic duty which he [Dr. Gardiner W. Allen] has performed in thus making such matters known to our people who, too commonly, regard this first line of the national defense as useful only during hostilities and as an undue burden at other times. It is idle to expect that, until the millennium arrives, it will ever be wholly exempt from calls to aid. Even now, by the way, it has to keep a force on the Yangtze River for the safeguarding of American property and lives. Nor, until that blessed day, will it be wise to allow to fall into disrepair or impotence an arm which cannot be improvised over night.

For what the Navy did to promote peaceful traffic in West Indian waters and the Gulf from 1800 to 1826, as shown by Dr. Allen, though different in kind from its peace activities of today, is still emblematic of the eternal value of the Navy in promoting the peace of the world and the welfare of our compatriots who travel and traffic upon the seven seas.

WE FIGHT FOR OIL. By Ludwell Denny. New York: Alfred A. Knopf. 1928. $3.00.

REVIEWED BY CAPTAIN JOHN K. CHRISTMAS, *U. S. Army*

Mr. Denny quotes on the title page of his excellent work these significant words of President Coolidge in his letter of December 19, 1924, constituting the Conservation Board: "It is even probable that the supremacy of nations may be determined by the possession of available petroleum and its products." With this as a theme the author interestingly reviews the present status of petroleum oil in modern civilization with particular reference to the influence of oil on the international situation.

Mr. Denny is an American journalist with experience as a foreign correspondent in Europe and the Near East and later as representative of a press bureau in Washington.

Now, when the pacifists and their many-hued adherents are striving to defeat every bill for a modest increase in our Navy, is an excellent time to read this important book. The author quotes chapter and verse to substantiate most of his statements so that the reader realizes, when he has finished, the ramifications, power, and shrewdness of the forces opposing our peaceful development.

Most striking is the fact that we are in a race and struggle with the British Empire for control of the world's oil resources. While, according to Denny, the principal contestants are Sir Henri Deterding and Mr. John D. Rockefeller, these have ranged behind them most of the other big oil men of their respective countries, not to forget the official and unofficial efforts of the two governments to support and protect their citizens. Denny says the United States was late getting into the international phase of oil, both commercially and politically (Is there much difference?) but has made good progress lately. It is shown that the British government is a partner in one large British oil company.

Having been amazed to find that America and Britain are contending fiercely for control of the international oil situation, the reader is somewhat prepared for a worse shock. *As it now stands (1926 figures) the United States produces about 70 per cent of the world's oil but Great Britain controls about 75 per cent of the known oil reserves of the world.* Shell Union Oil (British controlled) and subsidiaries were third in oil production *in the United States* in 1926 and foreign companies controlled 13 per cent of the reserve oil lands here. In Russia, Persia, South America, and Central America, Great Britain has beaten us to concessions for oil reserves.

In addition to the two major subjects described above, Mr. Denny takes up, among others, the following interesting subjects: the movement towards nationalization of oil lands in South America and the Near East; our troubles with Mexico over oil lands; overproduction of oil in this country; and the possibilities of the German processes of producing petroleum oils synthetically from coal.

This book is particularly interesting from a naval standpoint because oil is vital to our Navy and merchant marine. Lord Fisher's foresight as to the naval value of oil in 1882 is quoted: "The use of fuel oil adds 50 per cent to the value of any fleet that uses it."

Clemenceau wrote to Wilson in 1917: "A failure in the supply of petrol would cause the immediate paralysis of our armies, and might compel us to a peace unfavorable to

the Allies." This would apply even more to the American Army in any future war due to the increasing mechanization of the Army.

In the closing chapter Mr. Denny says: "Maybe the United States is 'too late,' as the British officials boast. Many neutral observers are of that opinion." And again: "But if the American government and companies are beaten, they do not know it. The struggle continues, and will continue." He says in the closing paragraph: "War is possible. War is probable—unless the two empires seek through mutual sacrifice to reconcile their many conflicting interests. . . . . If some miracle of diplomacy is achieved, oil may cease to be an international explosive." This book is heartily recommended to all interested in the future of our country and in international affairs.

LEX TALIONIS. Baltimore: Fleet-McGinley Co. 1922. $1.50.

THE UNLIQUIDATED WAR. 1928. $2.00, and

SIDE-LIGHTS ON REPARATIONS. 1928. $2.00. Washington: Byron S. Adams.

All by Ralph Warren Hillis.

Reviewed by Captain G. J. Meyers, U. S. Navy

In view of recent events which have again centered interest on the World War reparations question, every American should familiarize himself with the points involved. For the past year or so, the press has contained repeated discussions of the plan to sell German reparation bonds in the United States. This is what is meant by commercialization of the bonds. The meeting of the committee of international experts in Paris has brought this matter to a head. What this committee will bring forth as a plan of settlement, of course, no one can tell. But the fact remains that American thought, both official and private, in view of the many plans already presented by European and American bankers, should prepare itself to answer the questions that undoubtedly will have to be met by America when the committee of experts presents its conclusions and recommendations to the world. American preparation, such as it is, will be called upon to make decisions that best conserve the interests of the United States. The three books here reviewed throw much light on the question covering the period from the first peace proposals to the year 1928. The books should be read in the sequence in which they appear in the heading of this review.

Lex Talionis covers the period from the offering of peace to Germany to the signing of the Treaty of Versailles. It collects the series of events relating to the negotiation and formulation of the peace and draws from the facts certain deductions which were later to be proved correct in all their essential details. The first two chapters deal with the peace terms offered to and accepted by Germany. In all reparations discussions, it is necessary to keep one fact in view. The peace terms accepted by Germany included "compensation to civilians injured by aggressions by Germany by sea, land and air; no punitive damages." This truly meant reparations, not indemnities. The remainder of the books covers the Entente peace and the historical steps taken to circumvent President Wilson's wishes, the making of the peace treaty, the imposition of the naval blockade against Germany, and the forcing of Germany through starvation into signing the treaty.

The Unliquidated War covers the period from the signing of the Treaty of Versailles to the Dawes Plan. The fact of particular interest to Americans is the creation of the asset called "reparations" and the conspiracy in Europe to convert this asset into gold at the expense of America. The author says, "If the great transference of wealth from America to Europe as contemplated by means of the world economic conference in 1921 had been made, it would have been, in fact, a gigantic swindle upon the American people, for the German bonds would have been as worthless as the paper upon which they were written." A possibility of the future against which America must be on its guard, in case the German reparation bonds are commercialized, is the repudiation by Germany of the whole obligation. With these bonds in the possession of the American investor, whose bayonets would be used to force collections from Germany? Certainly not those of France. This book gives a picture of a "blue sky" venture without parallel in history.

Side-Lights on Reparations contains a series of commentaries on the reparation question, written between 1922 and 1928. The next to the last chapter deals with "The British Plan," the forerunner of numerous other plans appearing with increased frequency in the press up to February, 1929, all aimed at the one goal—the separation of America from a huge part of its gold stock for the benefit of Europe. In connection with the chapter preceding the conclusion to this volume, on the subject of "Suppression of Foreign News by the Press," it might be well to recall to the reader the words of President Coolidge on February 4, 1928: "Whenever any of the press of our country undertake to exert their influence in behalf of foreign interests, the candor of the situation would be greatly increased if their foreign connections were publicly disclosed."

In conclusion, it must be stated that President Coolidge showed emphatically his disapproval of the attempts to saddle reparations on the American public. Where his successor stands is not a matter of public knowledge. Where he will stand, if there are any doubts in his mind on the subject, depends on the mental preparedness of the people to express themselves intelligently upon the subject when the committee of financial experts presents its report to the American nation. These three books succinctly cover the historical period which forms the background for that report. Every officer of the government should be familiar with this background and every citizen, if he reads these books, will be mentally prepared on an international question vital in its outcome to the welfare of the United States.

LA BATAILLE DES FALKLAND*

By Claude Farrère and Paul Chack, edited with notes and vocabulary by W. G. Hartog, M.A., Litt. D., Oxford University Press, $.50. 1928.

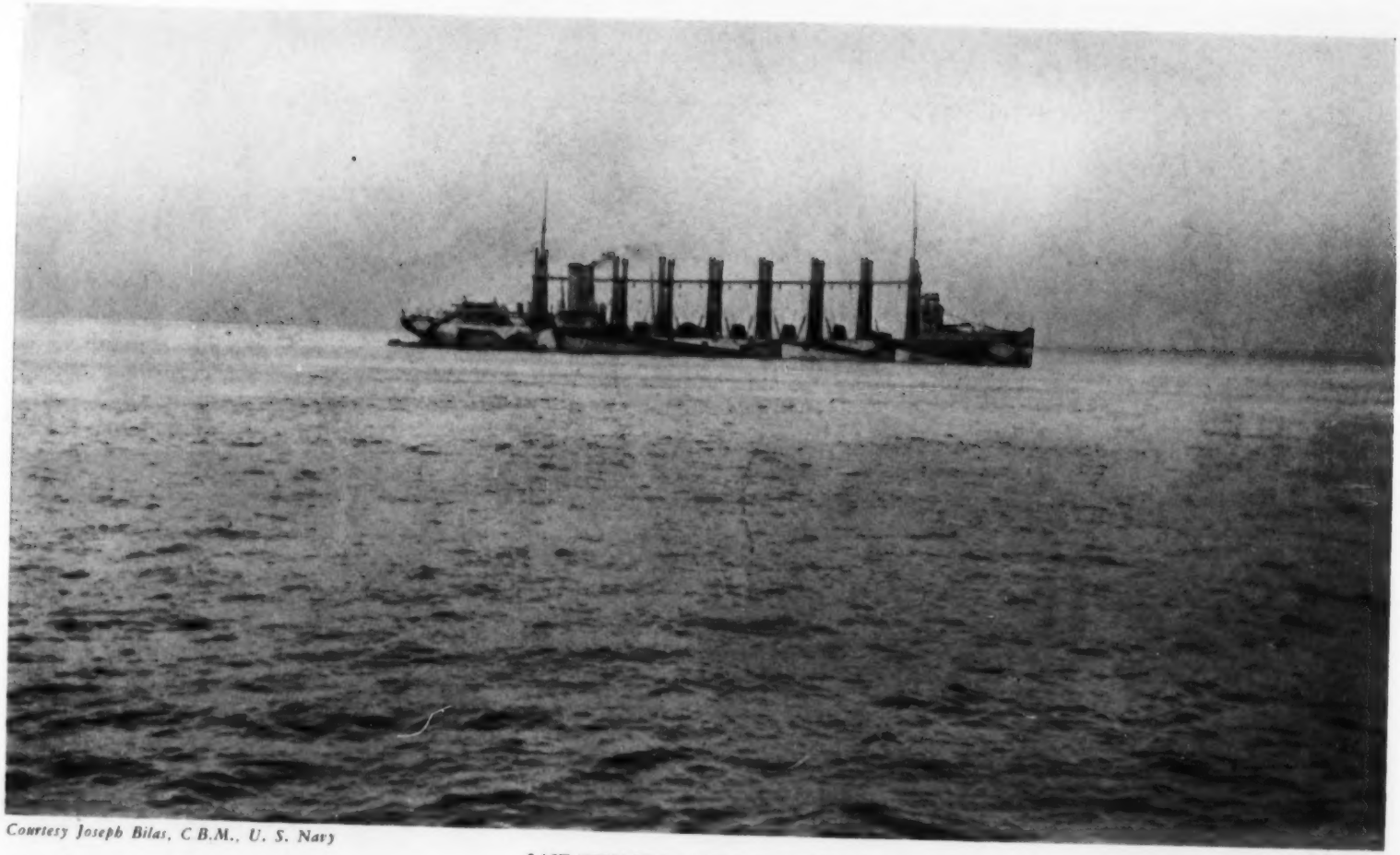
REVIEWED BY PROFESSOR HENRY BLUESTONE

As will be remembered, Admiral von Spee, sailing homeward after the easy victory of Coronel, detailed two cruisers on the morning of December 8, 1914, to destroy the radio station of the Falkland Islands, burn the coal supply and take the governor prisoner. The would-be raiders discovered a formidable British force which had arrived the day before. The flight of the German squadron began first east, then south. In the three separate combats that followed, the Germans, hopelessly outclassed in armor, range, and caliber, stood by their guns to the last shell. Then they opened the sea cocks to hasten the sinking of their disabled craft. Few were taken out alive from the icy waters.

These facts are told most vividly and concisely but with a keen eye for significant points and maneuvers. However, the story of the battle proper covers but twenty of the ninety pages. The rest is devoted to preliminaries and digressions, and it is these digressions, with their sallies of wit and irony, that make the booklet a delightful specimen of French colloquial style.

In the course of the story, we get a close glimpse of Lord Fisher on the job in his office; we attend war councils aboard the German flagship; and round Cape Horn in a raging mountainous sea where the German ships are saved from capsizing only by throwing overboard the coal they had on deck and which made them top-heavy. Among other touches of description is that of the serene, transparent moonlight night, "amidst a calm that pervades things and men. . . . . There, two miles ahead, you see the clear-cut profile of the *Dresden* on the diamond-studded azure of the crystalline sky. Midnight. But two hours ago and it was daylight; two hours more and a new day will dawn—the dawn of December 8."

*See pp. 1806 *et seq.*, U. S. Naval Institute PROCEEDINGS for September, 1925, for a review of "Combats et Batailles sur mer," five stories (Tahiti, Penang, La Mort de L'*Emden*, Coronel and Les Falkland) by the above authors.



Courtesy Joseph Bilas, C.B.M., U. S. Navy

LAST VOYAGE OF THE U.S.S. *CYCLOPS*

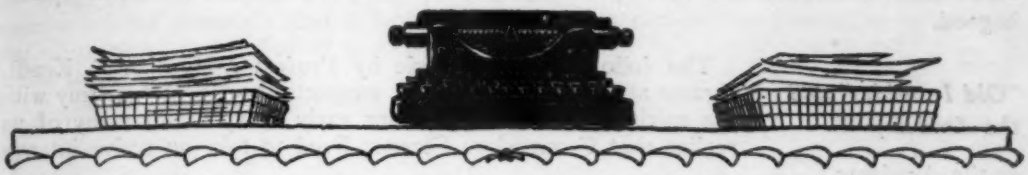
This picture was taken from the U.S.S. *Wisconsin*, en route to Hampton Roads in 1918. It is probably the last authentic picture of the *Cyclops*, whose disappearance still remains unexplained.

Courtesy of the Naval Academy

REAR ADMIRAL STEPHEN BLEECKER LUCE
1827-1917

Commandant of Midshipman, 1865-1868; Author of Luce's *Seamanship;* Organizer of the Naval Apprentice System; Founder of the Naval War College, 1885; President of the Naval Institute, 1887-1898. This portrait, which was painted by A. Margaretta Archambault, was presented to the Naval Academy, March 25, 1929 (Admiral Luce's birthday), by the daughters and grandsons of the admiral.

SECRETARY'S NOTES



The Naval Academy and the Navy

Although the Naval Academy has been established less than a hundred years, the necessity of such an institution was seen by our officers long before. Later on in these notes it will be seen that Commodore Charles Stewart, of "Old Ironsides" fame, advocated that there be a school for naval officers, where mathematics, languages, and steam should be taught.

What would the commodore think if he should see the Academy today? From eighteen hundred to two thousand midshipmen, striving to qualify for commissions in the Navy, two to three hundred graduating each year.

After all, this business of being an officer in the Navy is a profession like no other. In addition to a fundamentally sound knowledge of mathematics, English, modern languages, and history, a graduate must have a knowledge of international, civil, and criminal law, for he acts in the various capacities of judge, jury, and attorney; he must be a seaman, a profession in itself; he must have a knowledge of naval construction; he must master ordnance and the problem of fire control in this age of long-range fire; he must know about the various engineering professions and their application in the Navy, steam, electric, and gas engine; he must know aëronautics and navigation, surface, sub-surface, and aërial.

Fortunately, the system of education at the Naval Academy provides that a considerable number of officers from the fleet return to the Academy for tours of duty as instructors to keep the course of education up with the rapid developments in the fleet. Not many institutions of learning have this advantage, for the successful professional man objects to dropping his business to take up the problem of educating others.

In the Navy, it is part of one's business to help develop the officer material, on shore as well as at sea. The success of the Navy depends upon it, for the output of the Academy will ultimately command the fleet. Officers cannot afford to slight the job of education at the Academy, for they have to use the material developed.

In addition to the problem of education is the task of character-building, for the finest education is worthless to the Navy if it is not built on the foundation of military character. This cannot be acquired from a book; it must be gotten by training, precept, and example. The Navy builds its own officers; when better officers are built, the Navy will build them!

Now all this may seem aimless and unnecessary. But we want to call attention to the fact that the Naval Academy is part of the fleet, and a very important part. One officer, a graduate of the Academy, wanted to know why we laid so much stress on the Academy in the PROCEEDINGS, why publish the accomplishments of graduates in civil life? To the Editor, it is just as important for the service to concern itself with the efficiency of the Naval Academy as it is important for the field force of a manufacturing concern to be in-

terested in the efficiency of its manufacturing plant. The efficiency of one depends upon the efficiency of the other.

The Naval Academy is not expected to graduate admirals of the fleet; it graduates men from whom admirals can be developed. The record of the Navy indicates that the system is good.

"Old Ironsides" and the Academy

The following brief article by Professor Herman F. Krafft, curator at the Naval Academy, connects the Naval Academy with the spirit and traditions of our early Navy. Not many of us realize that Commodore Stewart lived to take an active interest in the Academy.

In 1860 the first class of midshipmen to be assigned to duty on board the frigate *Constitution,* which had just been ordered to the Naval Academy as a training ship, sent a polite request to Commodore Charles Stewart, the last of her distinguished war commanders of 1812 days, to initiate the famous ship in her new duties. Commodore Stewart, then eighty-two years old and still in active service as commandant of the Philadelphia Navy Yard, replied as follows:

PHILADA, Octo 15th 1860.

GENTLEMEN

I have your very flattering Invitation to visit you in your new School Ship (Old Ironsides) whose noble and glorious career has spread a halo of glory so deservedly around her—and you do me the honor to remind me that I was one of the many who trod her deck on one occasion of her distinguished services.

It would afford me great pleasure to meet your wishes but my short remaining time is so pressed upon by my Public and domestic duties, that I am obliged to forego the honor of your distinguished Invitation.

Accept Gentlemen my best wishes for your progress and the attainment of your high ambition. Permit me to tender to each and all of you, my respectful regards.

CHS STEWART

To the first junior class of acting midshipmen U. S.S. "Constitution"

The original of this letter in the Commodore's hand has hung on the walls of various buildings of the Naval Academy for more than half a century. Just sixty years ago this November, Commodore Stewart died at the age of ninety-one. For the last seventeen years of his life he had been senior officer of the Navy. His service of seventy-one years covered five wars. He entered the Navy in the heyday of the great sea fights of sail like St. Vincent and Trafalgar and finished his career in the era of steam and the ironclad.

Born in 1778 in Philadelphia, the son of poor Irish immigrants, Charles Stewart at the age of thirteen became a cabin boy on a merchantman, and at twenty was offered the command of an Indiaman. But he preferred to enlist in the Navy for the war against France, which broke out in 1798. In the U. S. brig *Experiment* he made a number of French prizes. On this cruise, by a skillful and dangerous piece of seamanship, he saved the women and children from a vessel which had been wrecked on a reef in Mona Passage, and deserted by her captain. The marooned were the families of the most respectable inhabitants of Santo Domingo, refugees from the Negro revolution on that island. They had been on the rocks for two days without food and water. The following excerpt from a letter of the governor of the Spanish part of Santo Domingo to the President of the United States throws an interesting light on Stewart's character.

This brave and generous officer, his crew, and all under his command, impelled by humanity, alertly strove to save these wretched ladies, and succeeded. A few moments after their safety was accomplished, the schooner sank. Amid thanks, vows, and lamentations, this worthy officer learnt that Captain Christian was on the mountain of Saona, with his effects. Without neglecting the ladies, he endeavored to secure a wretch, who ought not to live among mankind. This he effected, and, through the humanity of the ladies, used no greater severity towards him than to take him on board and bring him, well secured, to this capital. He treated the ladies with the greatest courtesy, accommodating them with his cabin, his table, and every convenience.

They have requested me to communicate these circumstances to your Excellency, and that in their names, I should present to you their cordial thanks, assuring you that it is an action which will remain forever impressed on their hearts. For myself, and in the name of my nation, and of all who know of the occurrence, worthy of so cultivated a nation and an officer of the United States, I present you my thanks with that sincerity which belongs to my character; I shall have the honor to render an account of it to my master, the King of Spain, in order that such an action may redound to the honor of this officer, of his flag, and of all his brave and generous crew.

God preserve you many years.

May it please your Excellency,

JOAQUIN GARCIA

SANTO DOMINGO, Jan. 21, 1801.

Stewart also played an important part in the next war, against Tripoli, when he in his command, the *Siren,* convoyed Decatur on the occasion of the blowing up of the *Philadelphia,* and later led Preble's squadron in the attack on the forts and pirate shipping, August 3, 1804.

In the War of 1812, the next and last of the three American conflicts a century ago in defense of the freedom of the seas, Stewart laid the foundations for the Navy's remarkable victories on the Atlantic. At the outbreak of the war, the Navy Department, thinking the overwhelming power of Britain on the seas too great to dispute, decided to concentrate its small naval forces in New York Harbor for the defense of the city. Stewart and Bainbridge at once urged that such a passive policy was wrong and pleaded that American warships be allowed to attempt aggressive measures. As a result—to take the work of only one frigate—the *Constitution,* successively under Hull, Bainbridge, and Stewart, made not only many captures of merchantmen, but accomplished what was then thought impossible—scored victories against the warships of Great Britain. As every school boy knows, Hull defeated the *Guerrière,* Bainbridge the *Java,* and Stewart the *Cyane* and *Levant.* Such victories against a navy of six hundred warships were insignificant in themselves but they had a tremendous effect in bolstering up the weak morale of the new nation over here. Nearly a century before Mahan, the advice of Stewart and Bainbridge gave a practical demonstration of the worry that an insignificant naval force, aggressively used, can cause even to the most powerful nation on the sea.

In the years 1817-20, during the reconstruction of Europe after its long Napoleonic wars, Stewart, in command of the Mediterranean squadron, watched over American shipping and further built on the foundations laid by Decatur. An incident of this cruise is revealed in an official manuscript copy in the Naval Academy Museum of charges instituted by Stewart against two officers of excellent standing in the Navy—Captain Thomas Macdonough and Master Commandant Henry E. Ballard. These charges, made by Stewart without personal animus, stated in effect that the two officers had been ordered to hold a court-martial on board Macdonough's ship, the *Guerrière,* that instead they had convened the court on "foreign soil," viz., at the Sun Tavern at Naples, had failed on specific order to make their report to Stewart till months later, had held meetings on board the *Guerrière* at which they had passed resolutions criticizing and casting contempt on their commanding officer, "to the destruction of subordination and discipline in the squadron." The officers were ordered home by the President. They later made a frank statement to the Secretary of the Navy admitting that they were wrong, and were ordered back to the squadron. Captain Stewart accepted their apologies and so the matter ended.

Immediately after his Mediterranean cruise, Stewart was given the command of a Pacific squadron to defend American shipping and interests during the revolts of the former South American colonies of Spain in the years when the Monroe Doctrine was taking shape, 1820-24. This was a delicate job but Stewart seems to have managed it with diplomatic skill and justice to all parties. One minor detail of his duties in the Pacific is illustrated by an original document in the archives of the Naval Academy Museum, viz., a protest of the minister of state of Peru against the landing of 1,000 muskets from an American filibuster. As an aftermath of this work, Stewart, at the instance of various interests, was court-martialed. He was charged

with violations of neutrality, neglect of duty, mercenary selfishness, sacrificing the honor of the United States, refusing protection to American citizens, etc. These charges were disproved *in toto* and Stewart was honorably acquitted on all counts.

1825-30 Captain Stewart was occupied with a variety of duties, down to, or up to, the examining of midshipmen. In 1830 the Secretary of the Navy and a Senate committee asked Stewart for his opinion as to whether the Marine Corps "can or cannot be beneficially dispensed with on board our public ships of war." In his report he made a spirited appeal for the retention of the marines. He argued that the marines, being indoctrinated in military discipline, obedience, and subordination, are most useful as sentries, in watching over magazines and storerooms, in guarding prisoners of war who sometimes outnumber the crew, and in the preservation of order. In port they are the deck guard, and at sea always near their arms; thus they prevent surprise from without and mutiny from within. In 1807 on the *Constitution,* the officers backed up by the marines nipped in the bud what might have been a serious mutiny. In a landing party, for example against a fort or armed place, the marines act as regular infantry under military discipline, and as a guard for the embarkation of seamen. The latter Captain Stewart stated, have a particular aversion for infantry tactics. True, the sailors' onset and first efforts are tremendous and formidable; but if resisted and discomfited they break up into a hundred groups and become a mere mob. "Strict subordination, obedience to orders and pride of feeling, intuitive to the regular soldier, cannot be attained by the seaman."

In this middle period of Stewart's life, his daughter, Delia Tudor, married Charles Henry Parnell. Her son, Charles Stewart Parnell, was destined years later to become the well-known Home Rule leader of Ireland.

Commodore Stewart thus became the grandfather of a statesman. He became also one of the fathers of the Naval Academy. In 1842 occurred the mutiny on the *Somers* which Midshipman Philip Spencer plotted to seize, and whose officers he intended to kill. Stewart presided over a court of inquiry into the conduct of Captain A. S. Mackenzie of the *Somers* for having hung Spencer, as a last resort in saving his ship and crew five hundred miles from port. Spencer happened to be the son of a powerful politician, who left no stone unturned in prosecuting Mackenzie in military and civil courts. In every case Mackenzie was completely exonerated. This mutiny focused the attention of the country on the need for a naval school on shore, so that boys, sometimes as young as ten, should no longer have to learn the profession of naval officer on shipboard. The Navy in those days often got the scum of the water fronts and was generally regarded as a reform school for young criminals. The older type of officer who had no use for new-fangled notions argued that the great leaders of yesterday—the Nelsons and Decaturs—had come forth unscathed from these rough seagoing schools of experience, which with their hazing and dueling "put the hair on the chests of the youngsters." Schools on shore, they insisted, would breed only mollycoddles. Commodore Stewart, though now in his sixties, thought otherwise. He advocated a large school on shore where mathematics, languages, international law, and the principles of steam should be taught. The last point, his belief in the "tea kettles," showed the commodore's progressive side. He had also had the hardihood to invent a gun sight—a useless article from the point of view of real sea dogs, who believed in fighting the enemy within point-blank range, as in the good old days.

In peering into the future, Commodore Stewart therefore had visualized a naval academy. What he saw was not the Naval Academy of today in this age of electricity and airplanes. But he advocated and foresaw the Naval Academy of the era of steam. In the last score of years of his active career, he was often consulted by leaders in public life on questions pertaining to the Navy. In addition to a tour of duty as navy commissioner, he served on all sorts of naval boards. In old age he came to be known as "Old Ironsides"; and at "Old Ironsides," his country place near Bordentown, New Jersey, on November 6, 1869, this Nestor of the sea died.

Speaking of "Old Ironsides"

The restoration of the *Constitution* is about half completed; the money for this work has been but half subscribed! The children of this wealthy nation seem to have fallen down on the job.

Just why is it that such a monumental work receives such half-hearted support? Are the children of the United States only interested in their own pleasures; have they no pride in the glorious history of the Republic? The school children of Japan raised enough pennies to build the greatest of Japanese battleships, the *Mutsu,* for their country, but the children of the United States are so apathetic that they are unable to raise $600,000 to recondition the most famous ship in our nation's history!

One of our members, remembering a similar state of affairs in our nation's history, when "Old Ironsides" was saved from destruction by the spirited poem of Oliver Wendell Holmes, submits the following as voicing the spirit of the present generation:

Aye, away with bunk of history's past,
Away sea yarns and sires!
"Old Ironsides" no more her spell can cast
O'er age of youth's strong fires.
Ye say iron men in wooden walls
The new-born nation saved!
'Tis "old stuff," fit for fiction's stalls
By none but book worms craved!

We live in an age of steam and steel,
Machinery and all that;
An age of wings fleet as Hermes' heel,
Of radio's flash and kilowatt.
The god of pelf and Wall Street's liar,
And jazz and movies' lure
Engross our lives and stir our fire
Above the soul's own cure.

So, away with Hull, Decatur, Bainbridge,
Sea dogs of Neptune's lair!
They're dead as shays and wooden bridge
In this age of "gas" and air.
Their wooden ship of yester-year,
May it also rest in peace!
'Her blood stained decks and storm rent gear'—
Of these we've had surcease.

Now we do not believe that the youth of the country are indifferent; we believe that the elders have not encouraged the children in this drive for funds. It is such a small amount, not much more than two cents per child throughout the country; and when the ship is restored, it is to be taken from port to port so that all may see the ship that did so much to keep our country's honor.

Let the elders inspire the youngsters to get out and get busy. Rear Admiral Philip Andrews, U. S. Navy, is Chairman, Old Ironsides Fund. Mail such money as is raised to him at the Navy Yard, Boston, Mass.

Save "Old Ironsides."

Debunking debunkers

The April issue of the *National Geographic Magazine* is a fitting answer to that type of writer who endeavors to show that our colonial forbears were an untutored, uncultured lot. Anyone who looks at the beautiful estates as pictured in this issue of the *Geographic* cannot help but realize that such magnificent homes could not have been conceived except by people of the highest cultural attainments.

Looking at some of our modern atrocities called homes, one often wonders if our civilization has not gone backward.

Attention please

Professor Charles Lee Lewis, Naval Academy, Annapolis, Maryland, is writing a biography of the late Admiral Franklin Buchanan, first superintendent of the Naval Academy. Has any of our readers letters or other source material that will be helpful in this work? If so, kindly consult with Professor Lewis.

Reunion Class of '69

The following report of '69's reunion shows why the Navy is what it is. Such spirit cannot be beaten.

On Saturday, the 27th of April, at the Metropolitan Club, there was held its forty-sixth consecutive annual reunion in Washington, by the Class of '69, date of '65, sixty years after graduation at the U. S. Naval Academy.

It is believed that this is a world record in class reunions, held away from the Alma Mater and at dates widely separated from those of graduation or commencement exercises.

The class roster shows nine names of the seventy-two midshipmen to whom General U. S. Grant handed their diplomas on June 4, 1869, at graduating parade in the Academy grounds.

Of these nine, three are civilians, E. J. Berwind, capitalist, H. M. M. Richards, Doctor of Literature, and A. M. Thackara, consul general (retired). The other six, Berry, Colvocoresses, Harris, Kimball, Mason and Stuart are retired rear admirals.

Four, Berwind, Colvocoresses, Kimball, and Mason, reported at the reunion, at which H. M. Wing, a non-graduate classmate, and R. M. Thompson of '68, were invited guests.

There has been much rotation in class officeholding during the last three-score years but the present president and secretary are the same men, Berwind and Kimball, who were elected to those offices at the first meeting, held for class organization, in 1867.

Sixty-nine never boasted herself as in any way famous, but always she has felt a quiet pride in the fact that the record of her members show a high standard of duty well done afloat and ashore, in fight and in frolic, in routine work and international tangles, in the civil life and in the military service of the United States of America. Also she has felt a quiet pride in the fact that she led the world in loyal obedience to the power of that curious fraternal bond known as "class-feeling."

Acknowledgment

The writer of this year's prize essay, "The Speed of Battleships," Lieutenant Franklin G. Percival, U. S. Navy, (Retired), wishes to express his appreciation to the following, for their criticisms and suggestions in the preparation of that paper:

Lieutenant Commander G. C. Manning (CC), U. S. Navy; Mr. Swift Riché; Mr. John Percival; Mr. P. H. Middleditch; Lieutenant Commander W. K. Harrill, U. S. Navy; Lieutenant Commander Alexander R. Early, U. S. Navy; and Lieutenant Commander Edmund W. Burrough, U. S. Navy.

The old Navy and the Coast Guard

The following brief article by Lieutenant Commander L. L. Bennett, U.S.C.G., sheds further light on the coöperation between our Navy and Coast Guard, back to the beginning of this country's history.

When the U. S. S. *Constitution* was placed in dock at the Boston Navy Yard, June 16, 1927, a part of the guard of honor at the ceremonies was composed of a detachment of Coast Guard enlisted men, the landing force of the Coast Guard destroyer division based at the yard. It is quite likely that very few among the spectators realized how fitting it was that these men were present or knew of the early relationship between the historic frigate and the vessels of the old Revenue Cutter Service. Various histories of the Navy make mention in detail of the first cruise of the *Constitution*, and of the fact that it was intended that four revenue cutters should operate with her, but the names of the vessels and the incidents of the service upon which they were engaged have been somewhat indefinite. A search for information on the subject has brought out some interesting facts regarding that period of our history immediately following the Revolution. Through the courtesy of Rear Admiral Elliot Snow (CC) U. S. Navy, Retired, and of Captain E. S. Kellogg, U. S. Navy, Retired, information in the possession of the Naval Historical Foundation was made available to the writer and proved most valuable. These notes will probably be new to many of our friends in civil life who hear so much regarding the operations of the Coast Guard in connection with the Eighteenth Amendment and so little about its early history.

The Coast Guard dates its history as an organization from August 4, 1790, the date of the approval by President George Washington of an Act of the First Congress establishing a Revenue Cutter Service. The first commissions were issued to former officers of the Continental Navy, which had been disbanded at the close of the Revolution. Just as Commodore John Barry is spoken of as "The Father of the Navy," so might Commodore Joshua Barney be described in his relation to the old Revenue Cutter Service. His connection with the establishment of the service has been forgotten to a great extent and the details of the first plan have been generally credited to Alexander Hamilton.

During the summer of 1789 Barney was in Washington as a guest of our first President, and lived for a time in the executive mansion. He had served in an efficient and energetic manner at sea during the Revolution, had seen the inside of British naval prisons more than once, and had firmly established his reputation as an excellent seaman and a sturdy fighter. While on this visit he came to know Alexander Hamilton, the Secretary of the Treasury, who was very much interested in the idea of raising a maritime force to safeguard the interests of the revenue and of our infant merchant marine. Mr Hamilton spoke of this to Commodore Barney, and asked if the latter would not submit a plan for the creation and operation of a revenue cutter service. This request was complied with and the commodore (he was then called Captain), received from the Secretary this acknowledgement:

> The ideas contained in your letter appear to me solid and judicious. As far as my reflections have gone they coincide very much with the views you entertain of the matter. At present nothing more can be done than to collect the information for some proper plan to be submitted to Congress at their next meeting; no power being at present vested anywhere for making the requisite arrangements. Let me request you to continue to furnish me with whatever hints may occur to you relative to the security of the Revenue.

Thus was the plan for the operation of the present Coast Guard formulated and it was presented to Congress "at their next meeting" with the resultant passage of the Act previously mentioned. Captain Barney was offered the first commission in the new service, and it was intended by Secretary Hamilton that he be assigned to command a cutter to be stationed in the Chesapeake. There being at that time no Navy the Secretary was anxious to secure Barney's services. However, this offer was declined because Captain Barney had purchased a

brig in order to embark in a trading enterprise to the West Indies and became, for a time, a merchant seaman.

After some delay the U. S. S. *Constitution,* one of the six frigates authorized by the Naval Bill of 1794, was launched at Boston on September 20, 1797, and, after trying out her sailing qualities, sailed on her first cruise from Newport, R.I., at 8:00 A.M., August 27, 1798. Her mission was to operate against the French privateers which were menacing American shipping to the southward of Cape Henry and in the West Indies. Cooper's *History of the Navy of the United States* makes mention of this period as follows: "That well known frigate, the *Constitution,* 44, had been launched at Boston, September 20, 1797; and she first got under way July 20 of this year (1798), under Samuel Nicholson, who in August, with four revenue vessels in company, was directed to cruise on the coast to the southward of Cape Henry." A letter to Captain Nicholson from the Navy Department, dated August 13, 1798, contained the following instructions:

> Captain Truxtun being ordered on a different service you will proceed without delay to the southward, and consider your cruising ground to extend from Cape Henry to our Southern Extremity. You will find on this station a Revenue Cutter of 14 guns, Captain Bright from Norfolk, and a vessel of the same size, Captain Cochran, from Charleston, and it is possible that in two or three weeks two other vessels of 10 and 14 guns will join you. . . . .

The above letter evidently reached Captain Nicholson before his departure from Newport and it appears to be fairly certain that the *Constitution* sailed alone and did not join company with the cutters which were first designated to operate under the direction of her commanding officer until some time later. Her log records that she anchored in Hampton Roads September 12, 1798, and that Lieutenant Bright, in command of the cutter *Virginia,* reported on board. Later are mentioned signals to the *Virginia* and the fact that the two vessels proceeded to sea in company and operated off the coast. Some time before these happenings, on June 22, 1798, the President was authorized to "increase the strength of any revenue cutter for the purpose of defense against hostilities near the sea coast," and it was probably due to the work incident to increasing their batteries and otherwise fitting out for war service, that the four vessels referred to above did not sail from Newport as was first intended.

In the *United States Naval Chronicle* by Charles W. Goldsborough, dated 1824, is mentioned the following squadron under Commodore John Barry, under date of December, 1798:

United States		44 guns	Com. John Barry.
Constitution		44 guns	Capt. Sml. Nicholson.
George Washington		24 guns	Capt. Patrick Fletcher.
Merrimack		24 guns	Capt. Moses Brown.
Portsmouth		24 guns	Capt. Danl. M'Niel.
Herald		18 guns	Mas. Comdt. C. C. Russel.
Pickering		14 guns	Lt. Comdt. Edw. Preble.
Eagle	revenue	14 guns	Capt. H. G. Campbell
Scammel	cutters.	14 guns	Capt. J. Adams.
Diligence		12 guns	Capt. J. Brown.

The four cutters joined the squadron late in 1798 or in January of 1799 and were able to render good service against the French privateers. The records of this period show that, in 1798 and 1799, eight cutters operated in the Caribbean Sea and among the islands of the West Indies. Of the twenty-two prizes taken during that time eighteen were captured by the cutters unaided, and they assisted in the capture of two others.

Davids of the Sea

The following letter from Captain A. Lais, Italian naval attaché, gives the exact time of the beginning of the Armistice on the Italian fronts.

Having read the note that Lieutenant Commander E. E. Hazlett, U. S. Navy, has published in the May issue of the U. S. Naval Institute PROCEEDINGS in regard to the sinking of the battleship *Viribus Unitis* inside the port of Pola during the night

October 31 to November 1, 1918, I wish to express to him my thanks for the praise tributed to the officers of the Italian Navy who carried out the attack.

At the same time, I take pleasure in completing Lieutenant Commander Hazlett's records with the exact date of the Armistice, which on both the land and sea fronts of Italy actually began at 4:00 P.M. of November 4, 1918. Therefore, up to that time the state of war against the ports, ships, and crews, fought by the Allies in the Adriatic ever since August, 1914, was still effective.

I should be obliged if you would kindly publish the foregoing in the United States Naval Institute PROCEEDINGS.

Nothing New Under the Sun

The following is a Roman General's opinion of "military critics": Lucius Æmilius Paulus, a Roman consul, who had been selected to conduct the war with Macedonians, B.C. 168, went out from the senate-house into the assembly of the people and addressed them as follows:

In every circle, and, truly, at every table, there are people who lead armies into Macedonia; who know where the camp ought to be placed; what posts ought to be occupied by the troops; when and through what pass Macedonia should be entered; where magazines should be formed; how provisions should be conveyed by land and sea; and when it is proper to engage the enemy, when to lie quiet. And they not only determine what is best to be done, but if anything is done in any other manner than what they have pointed out, they arraign the consul, as if he were on his trial. These are great impediments to those who have the management of affairs; for everyone cannot encounter injurious reports with the same constancy and firmness of mind as Fabius did, who chose to let his own authority be diminished through the folly of the people, rather than to mismanage the public business with a high reputation. I am not one of those who think that commanders ought never to receive advice; on the contrary, I should deem that man more proud than wise, who did everything of his own single judgment. What then is my opinion? That commanders should be counseled, chiefly, by persons of known talent; by those, especially, who are skilled in the art of war, and who have been taught by experience; and next by those who are present at the scene of the action, who see the enemy; who see the advantages that occasions offer, and who, embarked, as it were, in the same ship, are sharers of the danger. If, therefore, anyone who thinks himself qualified to give advice respecting the war which I am to conduct, which may prove advantageous to the public, let him not refuse his assistance to the state, but let him come with me into Macedonia. He shall be furnished by me with a ship, a horse, a tent, and even with his traveling charges. But if he thinks this too much trouble, and prefers the repose of a city life to the toils of war, let him not, on land, assume the office of a pilot. The city, in itself, furnishes abundance of topics for conversation; let it confine its passion for talking, and rest assured, that we shall be content with such councils as shall be framed within our camp.

—Livy, Book XLIV, Chapter 22.

Change in Board of Control

At its last meeting the Board of Control accepted with regret the resignations of Captain J. N. Ferguson, U. S. Navy, Captain G. V. Stewart, U. S. Navy, and Commander R. M. Brainard, U. S. Navy, as members.

The Board then elected Captain C. P. Snyder, U. S. Navy, Captain A. T. Church, U. S. Navy, and Commander Oscar Smith, U. S. Navy, to membership on the Board of Control to fill the vacancies.

PUBLICATIONS

U. S. NAVAL INSTITUTE

PICTORIAL

Around the World with the Fleet, 1907-1909.

Just off the press. 280 pages of the finest half-tone engravings showing pictures taken on this epic cruise. $3.50 postpaid.

BIOGRAPHY

Matthew Fontaine Maury.

By Charles L. Lewis, U. S. Naval Academy. Foreword by Commander Richard E. Byrd, U.S.N. A biography every American should read. 1927. $6.00 postpaid.

STRATEGY AND TACTICS

The Dardanelles Expedition. Second Edition, 1927.

By Captain W. D. Puleston, U.S.N. A critical study of this amphibious undertaking. 70 illustrations. Semi-flexible red buckram binding. $2.80 postpaid. ($2.25 to officers of the U. S. Army, Navy, Marine Corps, and Coast Guard, to members of the Institute, to all U. S. government departments, and to all who saw service in the Dardanelles Campaign.)

Five Years in Turkey.

By General Liman Von Sanders, Chief of the German Military Mission to Turkey. Translation by Colonel Carl Reichmann, U. S. Army (Retired). 340 pages, illustrations and three military maps. $3.50 postpaid.

NAVAL ORDNANCE

Exterior Ballistics, 1926.

For the instruction of midshipmen. By Lieutenant E. E. Herrmann, U. S. Navy, under the direction of the Head of Department of Ordnance and Gunnery. 322 pages with tables and figures. $6.00 postpaid.

Range and Ballistic Tables, 1926.

Prepared for use of midshipmen as an auxiliary companion volume for *Exterior Ballistics,* and contains tables required with the latter textbook. $4.70 postpaid.

Naval Ordnance, 1925.

A textbook prepared for the use of midshipmen by officers of the United States Naval Academy. 641 pages, illustrated. $6.00 postpaid.

LAW

International Law for Naval Officers.

By Comdr. C. C. Soule, U. S. Navy, and Lieut. Comdr. C. McCauley, U. S. Navy. 255 pages. Revised 1928 by Lieut. Comdr. C. J. Bright, U. S. Navy. $2.00 postpaid.

Constitutional Law. Reprinted 1924 with slight additions.

By H. J. Fenton, M.A., LL.D. 351 pages. $2.25 postpaid.

ELECTRICAL ENGINEERING

Robison's Manual of Radio Telegraphy and Telephony.

Eighth revised edition. By Captain S. C. Hooper, U. S. Navy. 780 pages, illustrated. 1928. $4.00 postpaid.

Storage Battery Manual, Including Principles of Storage Battery Construction and Design, 1920.

By Lieut. Comdr. Lucius C. Dunn, U. S. Navy. 400 pages. $5.00 postpaid.

NAVAL CONSTRUCTION

Principles of Naval Architecture and Warship Construction.

By Lieut. Comdr. G. C. Manning (CC), U. S. Navy, and Lieut. T. L. Schumacher (CC), U. S. Navy. A treatise especially prepared to furnish in compact form the information required by the operating personnel of the U. S. Navy. Revised and brought up to date, 1928. 377 pages, illustrated. $5.00 postpaid.

Naval Artificer's Manual, 1918.

By Lieut. McCall Pate (CC), U. S. Navy, 797 pages, illustrated. $2.00 postpaid.

NAVIGATION

Aquino's "Newest" Sea and Air Navigation Tables. 1927.

By Commander Radler de Aquino, Brazilian Navy. For solving all problems by Inspection. The simplest and readiest in solution. The safest and the most exact. 171 pages. $5.00 postpaid.

Navigation and Nautical Astronomy.

By Commander Benjamin Dutton, U. S. Navy. First revised edition. It is a thorough treatise on the subject, and is the standard textbook for instruction of midshipmen. 1928. $5.50 postpaid.

Navigation and Compass Deviation, 1928.

By Comdr. W. C. P. Muir, U. S. Navy. 765 pages. $4.20 postpaid.

Practical Manual of the Compass, 1921.

By Captain Harris Laning, U. S. Navy, and Lieut. Comdr. H. D. McGuire, U. S. Navy. 234 pages, illustrated. $3.90 postpaid.

Line of Position Book.

By Lieut. Comdr. P. V. H. Weems, U. S. Navy. 44 pages. 1928. $2.50 postpaid.

Azimuth Diagram.

Large separate diagram to accompany *Line of Position Book*. 1928. $.80 postpaid.

MARINE ENGINEERING

Principles of the Basic Mechanisms.

Prepared for use of midshipmen by Lieut. Comdr. R. N. S. Baker (CC), U. S. Navy, and W. E. Farrell, Associate Professor, U.S.N.A. 1926. 132 pages. $3.75 postpaid.

Engineering Materials and Processes.

Prepared as a textbook for midshipmen. Is the successor of Danforth's Mechanical Processes. By Lieut. Comdrs. G. B. Ashe, and J. I. Hale (CC), U. S. Navy. 1926. $3.90 postpaid.

Internal Combustion Engines.

Revised edition just off the press Each chapter carries a separate pagination to permit revision where necessary without disturbing the remainder of book. 1929. 326 pages. $3.40 postpaid.

Naval Reciprocating Engines and Auxiliary Machinery, 1922.

By Commanders J. K. Barton, U. S. Navy, and H. O. Stickney, U. S. Navy. 634 pages, illustrated, with Atlas containing 48 plates. $6.50 postpaid.

Marine and Naval Boilers, 1920.

By Lieut. Commanders Frank Lyon, U. S. Navy, and A. W. Hinds, U. S. Navy. 404 pages, illustrated. $3.80 postpaid.

Naval Turbines, 1924.

By Commanders O. L. Cox, U. S. Navy, and M. A. Libbey, U. S. Navy. Prepared primarily for use in the instruction of midshipmen. 251 pages with many illustrations and drawings. $5.00 postpaid.

MATHEMATICS

Elementary Mechanics.

A complete revision of the 1922 edition, by Professor Paul Capron and Associate Professor L. T. Wilson, U.S.N.A. 1926. 189 pages. $5.00 postpaid.

PHYSICAL TRAINING

Manual of Athletic Requirements.

By Lieutenant Commander W. A. Richardson, U. S. Navy. Revised and enlarged edition. 1927. 691 pages. Profusely illustrated. $4.50 postpaid.

ENGLISH

Writing and Speaking: a Handbook for Naval Officers.
By Professor Carroll S. Alden, U.S.N.A. (This book replaces "Composition for Naval Officers.") 1927. 359 pages. $2.50 postpaid.

LANGUAGES

French Nautical Phrase Book and Reader.
By Professor P. J. des Garennes, U.S.N.A. 1921. 181 pages. $1.50 postpaid.

A Spanish Nautical Phrase Book and Reader.
By Professor Arturo Fernandez, U.S.N.A. 1925. 175 pages. $2.00 postpaid.

AVIATION

Naval Aviation.
Revised edition just off the press. New illustrations. 1929. $1.75 postpaid.

Airplanes, Airships, and Aircraft Engines, 1921.
By Lieut. Albert Tucker (CC), U. S. Navy. 448 pages. $3.50 postpaid.

NAVAL LEADERSHIP

Naval Leadership: with Some Hints to Junior Officers and Others.
Containing some 200 pages of clear type, neat and durable fabrikoid binding, size, convenient for the pocket, approximately 4½x7⅛". 1925. $1.50 postpaid.

NAVAL COMMUNICATIONS

A Digest of Naval Communications.
Compiled by Lieutenant Commander James M. Lewis, U. S. Navy, primarily as a textbook for midshipmen, but the book will also provide an excellent text for officers preparing for examinations for promotion. 1928. $1.25 postpaid.

MISCELLANEOUS

Man-of-War's Man's Manual.
By Rear Admiral R. R. Belknap, U.S.N. (Retired). 1928. 241 pages, illustrated. $.65 postpaid.

Yankee Mining Squadron, 1920.
By Captain R. R. Belknap, U. S. Navy. 110 pages, illustrated. $1.00 postpaid.

Routine Book, 1918.
By Captain R. R. Belknap, U. S. Navy. 308 pages. $1.25 postpaid.

Index to Proceedings (Nos. 1 to 100) and (Nos. 101 to 200).
$.50 each, postpaid.

U. S. Navy Cook Book, 1920.
By School for Cooks and Bakers. U. S. Naval Training Station. Newport, Rhode Island. 130 pages. $.60 postpaid.

Physiology, Hygiene and First Aid.
By Captain R. G. Heiner (MC), U. S. Navy. 1928. Third revised edition. 219 pages. $1.85 postpaid.

OFFICIAL DRILL BOOKS

(For Sale Through U. S. Naval Institute)

Bluejackets' Manual, 1927.
958 pages. $1.50 postpaid

Landing Force Manual, 1927.
5½x9. 703 pages. $1.70 postpaid

The Boat Book of the U. S. Navy, 1927.
266 pages. $.85 postpaid

Ship and Gunnery Drills, 1927.
350 pages. $.80 postpaid

Special Notice

Naval Institute Prize Essay, 1930

A PRIZE NOT TO EXCEED FIVE HUNDRED DOLLARS WITH A GOLD MEDAL, and a life membership in the Institute (unless the author is already a life member, in which case he will receive the commuted value thereof), is offered by the Naval Institute for the best essay submitted on any subject pertaining to the naval profession.

The following rules will govern this competition:

1. The award of the prize to be made by the Board of Control, voting by ballot and without knowledge of the names of the competitors.

2. Each competitor to send his essay to the Secretary-Treasurer in a sealed envelope marked "Prize Essay Contest." The name of the writer shall not appear on the essay, but instead thereof a motto. Accompanying the essay a separate sealed envelope will be sent to the Secretary-Treasurer, with the motto on the outside and the writer's name and motto inside. This envelope will not be opened until after the decision of the board. Essays must be received on or before January 1, 1930.

3. In addition to the "Naval Institute Prize," one or more essays may receive "Honorable Mention," if of sufficient merit to justify that award; or, in the event that no essay is adjudged of sufficient merit to receive the "Prize," the best essay submitted may receive "Honorable Mention" in lieu thereof.

4. In case one or more essays receive "Honorable Mention" the writers thereof will each receive a prize, the amount of such awards to be decided by the Board of Control in each case.

5. Announcement of awards will be made as soon as practicable after January 1, 1930.

6. Essays awarded the "Naval Institute Prize" or "Honorable Mention" will be published in the NAVAL INSTITUTE PROCEEDINGS as soon as practicable. Essays not awarded a prize may be published at the discretion of the Board of Control, and the writers of such articles shall be compensated at the established rate for articles not submitted in competition.

7. Articles shall be limited to eleven (11) printed pages in the PROCEEDINGS (approximately 8,000 words), but shorter articles will receive equal consideration.

8. In event of the prize being awarded to the winner of a previous year, a gold clasp suitably engraved will be given in lieu of the medal.

9. All essays must be typewritten, double spaced, and submitted in duplicate.

R. C. MACFALL
Captain, U.S.N., Secretary-Treasurer

How swift the tempo of the saga of the air

Winged transport ships fly the air lanes of today with the regularity of ocean liners. Truly aviation is a business!

IT is a splendid thing for aviation that wonders of yesterday have become the habit of today. Bright conquests of other years never lose the sharp edge of their memorability, even if exceeded in figure and in fact. That is the history of all pioneering and the bravest and most modest are the first to realize it.

Of all the companies in aviation Wright, perhaps, has the best title to boast the sum of its attainment. For Wright engines have made history too often to repeat, too gloriously to forget.

But Wright's face is towards the future...as should be the faces of all. For what Wright has already accomplished is little to what the industry will do.

For aviation is a business. We know it. You know it. And the public is grasping it fast. For men will take their ways upon the air as now they take a taxi . . . men will sleep among the clouds as tonight they ride the Pullmans. And people who are asking themselves about a two-car garage will sometime worry about a hangar.

This is a business. Our common interest is to develop it in a business-like manner.

A striking series of New Wright descriptive booklets and bulletins is now ready for distribution. You are invited to write for them. Please order by name: GENERAL CATALOGUE, WHIRLWIND ENGINES *(J-6 Series)*, CYCLONE BULLETIN, THE STORY OF WRIGHT AERO, OFF THE GROUND AND GO. *Also:* WHIRLWIND-NINE, WHIRLWIND-SEVEN. WHIRLWIND-FIVE, *and* WRIGHT-GIPSY.

WRIGHT

AERONAUTICAL CORPORATION

PATERSON, NEW JERSEY

No. 4 OF A SERIES OF TALKS ON AMMUNITION QUALITY

1

VIGILANCE

CONSTANT vigilance has to be exercised in preparing and making a proof test of all smokeless powders. Very slight variations in the loading of ammunition will introduce errors in the delicate measurements that are used to record the test results. The accompanying photographs are to illustrate the degree of accuracy which is followed in the loading operation.

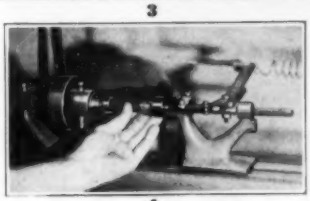
Photograph No. 1 shows the actual weighing operation of each charge of powder for a series of a 20-round test. The powder is weighed on an analytical balance which is accurate to a hundredth of a grain.

Photograph No. 2 illustrates the care with which the wads are first loaded in the shells so that they will be parallel to the base of the shell.

Photograph No. 3 shows how each shell is measured for a uniform length of crimp.

2

3



4

Photograph No. 4 illustrates how the crimp is finally applied. Note that the machine is semi-automatic in operation—the loaded shell being forced against the revolving crimping head by a constant weight applied through a system of levers.

The ammunition is now ready to be tested.

Du Pont powders are used by all of the principal ammunition manufacturers. They have selected du Pont powder because its ballistic qualities contribute so largely to the superiority of the ammunition, and the consequent success of its users. To maintain these standards of excellence, the ammunition companies will continue to load those powders ensuring the best ammunition possible for a specified purpose.

The du Pont Company with its experience of 126 years and its present resources can supply to ammunition companies the type and quality of powders required to maintain the reputation of ammunition manufacturers and the confidence of the shooters.

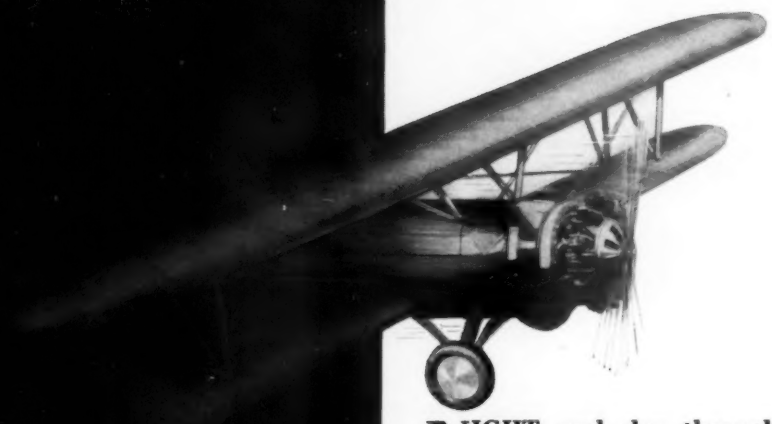
E. I. du Pont de Nemours & Co., Inc. *Smokeless Powder Dept.* **Wilmington, Del.**

DU PONT

REG. U. S. PAT. OFF.

Smokeless Shotgun Powders

NIGHT & DAY



NIGHT and day through the skyways of the world . . . "Wasp" and "Hornet" engines write new records of performance.

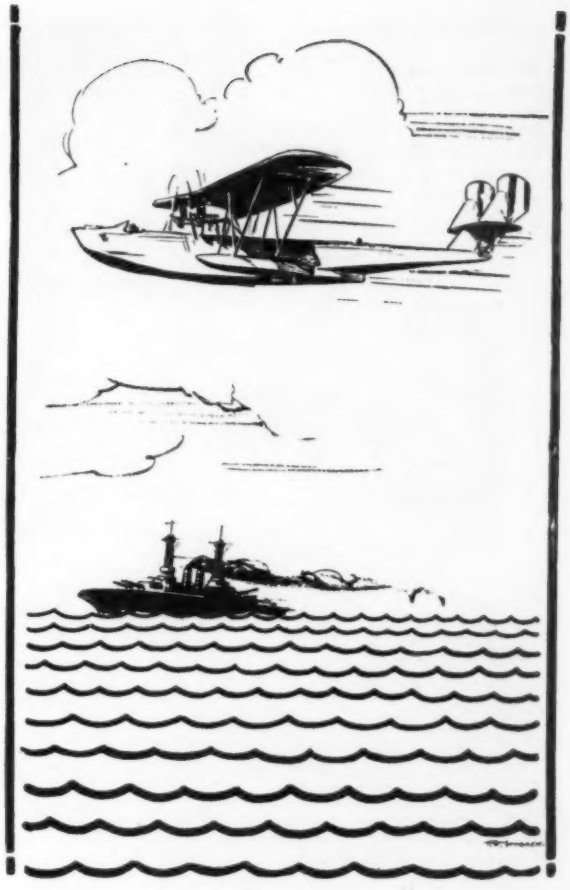
Each twenty-four hours, carrying passengers and cargoes on exacting schedules, they fly a distance greater than around the globe.

The uninterrupted flow of power from these dependable engines has brought speed, comfort, and safety to aerial transportation.

THE
PRATT & WHITNEY AIRCRAFT CO.
HARTFORD - - - CONNECTICUT
Division of United Aircraft & Transport Corporation

Wasp & Hornet
ENGINES

Manufactured in Canada by The Canadian Pratt & Whitney Aircraft Co., Ltd., Longueuil, Quebec; in Continental Europe by the Bavarian Motor Works, Munich.



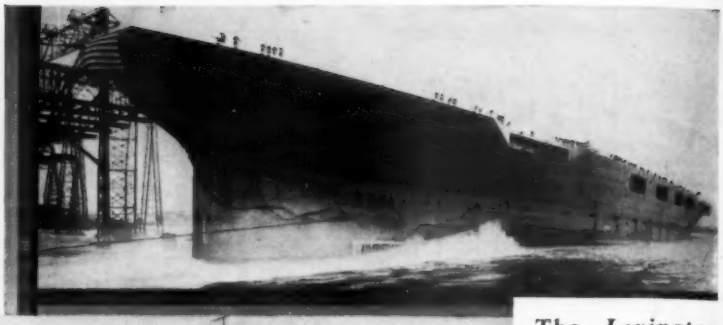
OUR FIRST LINE *of* DEFENSE

With the fleetness and staunchness of the eagle . . . The Admiral, the Navy's latest patrol flying boat XPY-1 goes to sea as a most potent part of our national security. With a cruising speed well over one hundred miles an hour, and a carrying capacity considerably in excess of any flying boat yet built, The Admiral represents a decided step forward in giving wings to our Navy.

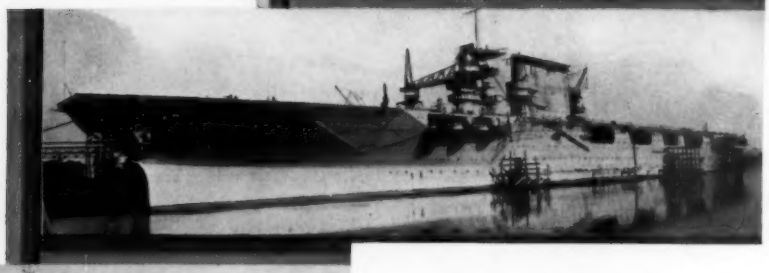
Operating in conjunction with our battleships, cruisers and auxiliary men o'war far out to sea, The Admiral makes our Navy more than ever . . . our "first line of defense"!

CONSOLIDATED AIRCRAFT CORPORATION · BUFFALO, N. Y.

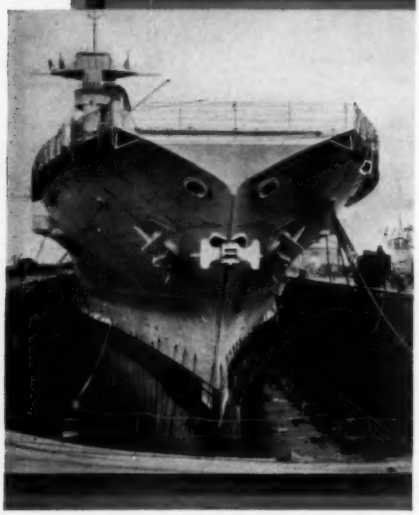
The ADMIRAL



Launching of the U. S. Airplane Carrier *Lexington* at Bethlehem's Fore River Plant, Quincy, Mass. Flight deck of this ship is 880 feet long and from 85 to 90 feet wide.



The *Lexington* at fitting-out dock, Fore River Plant. This monster ship is Turbo-Electric driven, with a rating of 180,000 shaft horsepower. Steam is supplied to the main Turbine by 16 Bethlehem Yarrow-type Boilers.



3,000 miles distant from Fore River, but in a Bethlehem dock. The *Lexington* being serviced in the 1,020-foot graving dock of Hunter's Point Works of Union Plant, San Francisco Bay.

Building and servicing ships . . . even as large as the Lexington

Bethlehem's facilities for building and completely servicing ships comprise the building ways, shops and foundries, drydocks, and fitting-out basins, of eight yards on the Atlantic and Pacific Coasts.

A clearer idea of the extent of Bethlehem's facilities may be obtained from the handling of the U. S. Airplane Carrier *Lexington*. This monster ship was built and fitted out at the Fore River Plant, Quincy, Mass. Later, when in Pacific waters, it was serviced in the 1,020-foot Graving Dock of Hunter's Point Works, San Francisco Bay.

BETHLEHEM SHIPBUILDING CORPORATION, LTD.
BETHLEHEM, PA.

General Sales Offices:

Atlantic Coast: New York: 25 Broadway Pacific Coast: San Francisco: Matson Bldg.
District Offices: Boston, Baltimore and San Pedro

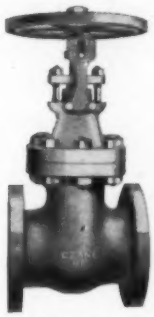
BETHLEHEM
SHIPBUILDING *and* REPAIRS

150 Pounds Pressure

CRANE VALVES

2500 Pounds Pressure

24 inch low pressure gate valve No. 5435.



4 inch high pressure gate valve No. 5067 E with indicator.

A further note on engineering competition

"The matching of wit against wit to reach the top of each class, undoubtedly has been an enormous factor in making the engineering performance of the U. S. Navy the envy of the forces afloat under other flags," comments Lieut. C. J. Harter in the March issue of "U. S. Naval Institute Proceedings."

An astute observation, beyond question. Yet it leaves something unsaid; something to which a goodly share of the navy's excellence can be laid. And that, call it tradition if you like, or pride, or morale, is a force even stronger than the competitive instinct. For growth by competition ceases with competition, while pride leads men on to fulfill a splendid dream.

And because in them this pride is developed to so great an extent, Crane Co. can appreciate how vital a force it is in the American Navy.

The Navy, pride has spurred to its present state of engineering supremacy. Crane Co., pride has led to devise and manufacture piping materials and fittings whose undeviating quality has for 74 years stood as the standard of excellence in this field.

CRANE

GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVE., CHICAGO
NEW YORK OFFICE: 23 W. 44TH STREET
Branches and Sales Offices in One Hundred and Eighty Cities

THIS IS OUR GOLDEN ANNIVERSARY

It Is Your Golden Opportunity . . . and
Opportunity Knocks But Once!

The Navy Mutual Aid

Is Composed of Over

6,000 Officers and Midshipmen

Are YOU a member, if not you should join AT ONCE!

ESPRIT DE CORPS was and is the foundation of this Association.

Wouldn't it give you a feeling of satisfaction to know that *YOU* are really giving *YOUR* assistance to the dependents of your Brother Officers at a time when they most need assistance?

Wouldn't it give you a feeling of satisfaction to know that your Brother Officers would give *YOUR* dependents the same assistance?

IMMEDIATELY upon notice of a member's death his beneficiary is wired or cabled the benefit of $7,500, all advance assessments to his credit and his pro rata share of the Reserve Fund.

All claims for Arrears of Pay, Six Months Gratuity, War Risk Insurance and Pension are promptly and satisfactorily taken care of by this Association, with no trouble or cost whatever to those left behind.

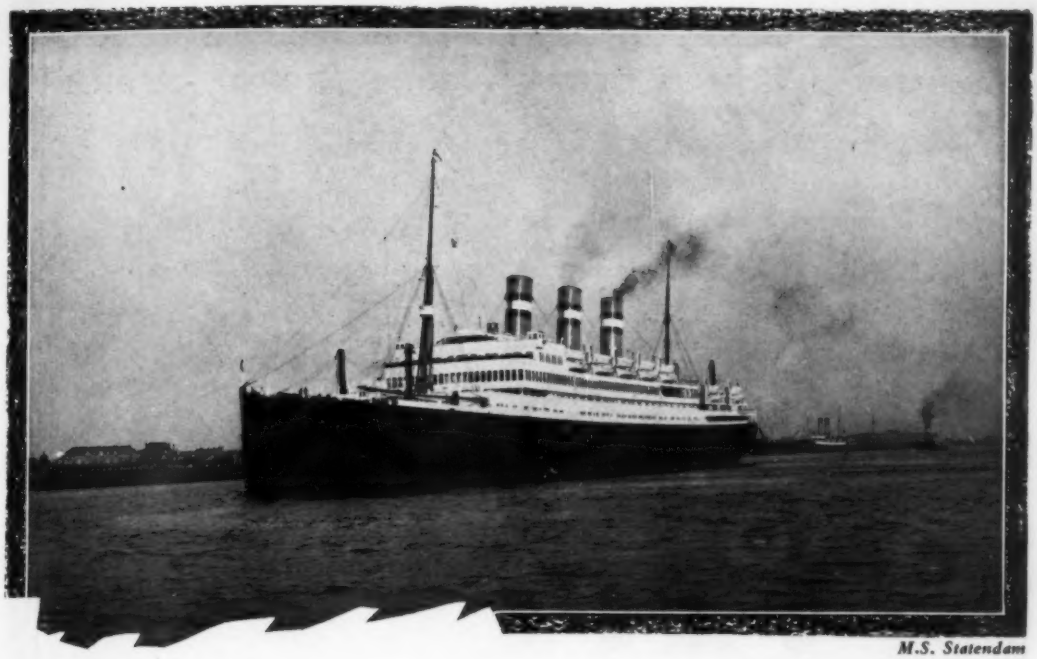
You can, if eligible, join this Association, and thereby increase your estate over $7,500, and also have the satisfaction of knowing that your dependents will be taken care of, and receive every assistance possible.

Applications may be obtained from Captain C. P. Snyder, Captain A. T. Church or Commander Jonas Ingram, our Directors at Annapolis.

Take Advantage of Your Opportunity!

Join at Once!

T. J. COWIE
Rear Admiral, (SC), U. S. Navy,
Secretary and Treasurer,
Room 1054, Navy Department
WASHINGTON, D.C.



M.S. Statendam

The Sperry Gyro-Compass is chosen for the M.S. "Statendam"

THE dependability and ruggedness of the Sperry Gyro-Compass made it the choice of the Holland America Line for their new Motorship "Statendam." The "Statendam" is also equipped with the Gyro-Pilot, giving them the further advantage of efficient steering.

The Sperry Gyro-Compass employed on this new palatial liner is the same type that has become standard for the World's Merchant Marine and Naval auxiliary service.

SPERRY GYROSCOPE COMPANY, Inc.

Brooklyn — New York

ALUMINUM · IN · EVERY · COMMERCIAL · FORM

ALUMINUM PAINT

for Aviation

Aluminum Paint is desirable for airplanes, airports, hangars, and direction markers because it gives them a high visibility and a protection superior to other paints. It preserves all kinds of fabrics, such as are used on airplane wings and fuselages.

On the covering of rigid airships, kite balloons, and blimps, Aluminum Paint protects because it stabilizes the buoyancy of the ship by reflecting a large portion of the sun's rays, thus helping to prevent changes of temperature in the gas cells.

The best Aluminum Paint is made of a suitable vehicle and minute flakes of Albron, aluminum bronze powder. These flakes overlap one another at the surface of the paint, much like falling leaves. Thus is formed a metallic sheath which protects not only the surface painted, but the major portion of the paint film as well.

ALUMINUM COMPANY OF AMERICA

PITTSBURGH, PA.

Offices in 18 Principal American Cities

REGO K Cutting Torch
Cutting 8" Steel Shaft for Scrap

REGO TRADE MARK

OXY-ACETYLENE WELDING
***and* CUTTING EQUIPMENT**

This is the kind of job that makes you appreciate a REGO K cutting torch. Walks right through heavy rust coated or concreted scrap with never a flash back or pop-out.

Gases mix in each tip—giving maximum economy and efficiency. Tips are pure drawn copper. Plenty of preheat to give you a fast start and a quick cut.

Write for REGO Catalog

THE BASTIAN-BLESSING CO.
240-258 E. Ontario St., Chicago, Ill.

"Ethyl is good for *any* car"

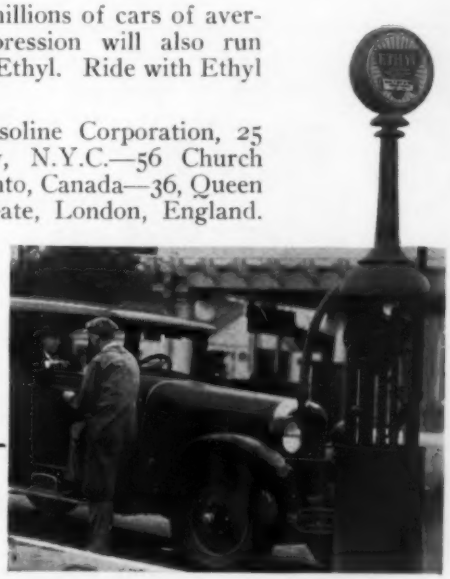
Whatever your car will do on gasoline, it will do better on *Ethyl* Gasoline. And the reason is simple:

Ethyl Gasoline is good gasoline *plus* Ethyl anti-knock fluid (containing tetraethyl lead) which automotive science developed to give the motoring public the advantages of high compression. These are: more power from each gallon of fuel; stronger, smoother engine action; less shifting; quicker pick-up—better performance and control in every respect.

Distribution of Ethyl Gasoline by leading oil companies has enabled motor car manufacturers to introduce new models with engines of higher compression.

But the millions of cars of average compression will also run better on Ethyl. Ride with Ethyl today.

Ethyl Gasoline Corporation, 25 Broadway, N.Y.C.—56 Church St., Toronto, Canada—36, Queen Anne's Gate, London, England.



ETHYL
GASOLINE

THE DOUGLAS COMPANY

SANTA MONICA, CALIF.

FIRST AROUND THE WORLD

Airplane Development and Production

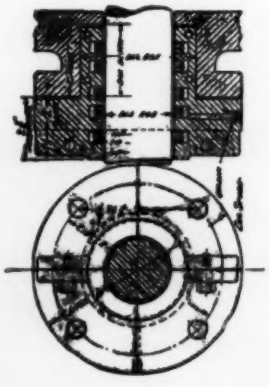
COMMERCIAL AND MILITARY TYPES

BOEING AIRPLANE CO.

Manufacturers of

COMMERCIAL AND MILITARY AIRCRAFT

SEATTLE, WASHINGTON



Metallic Packing

for

All Conditions

of

Marine Service

Send for Catalogue and List of Users

FRANCE PACKING COMPANY

6506 TACONY ST., PHILADELPHIA, PA.

Kinney Turbine Driven Pump

These pumps are built for any capacity and pressure up to 400 lbs.

KINNEY MANUFACTURING COMPANY, BOSTON, MASS.

INCo

Nickel

SHOT — INGOT — WIRE — ELECTROLYTIC 99.9% — STRIP—CASTINGS—ROLLED NICKEL (in all commercial forms)—NICKEL OXIDE 77.5%—SEAMLESS TUBING.

Prime metals for the manufacture of Nickel Steel, Nickel Cast Iron, Nickel Silver, Anodes and all remelting purposes.

INCo

Monel metal

ROD — SHOT — SHEET — CASTINGS — INGOT — TUBING — WIRE — STRIP

Monel Metal can be machined, cast, forged, spun, punched, drawn, brazed, soldered and welded. Wherever it is used, wear and corrosion are largely prevented. Write for "List B" of available literature.

Monel Metal is a technically controlled Nickel-Copper alloy of high nickel content. It is mined, smelted, refined, rolled and marketed solely by The International Nickel Company. The name "Monel Metal" is a registered trade mark.

INCo NICKEL

THE INTERNATIONAL NICKEL COMPANY, INC.

67 WALL STREET NEW YORK, N. Y.

INCo MONEL METAL

AIRPLANE DOPE

TITANINE

REG. TRADE MARK

Made by

TITANINE, Inc., UNION, NEW JERSEY

REFLEX WATER GAGES

(Klinger Type)

The Water Appears Black

Our reflex Gages assure quick and accurate reading of the water level as the water always appears black, and white indicates the absence of water. They are safe at high pressure and are absolute protection to boilers and men. They require no wire netting, etc., as the glass does not fly when disabled. They can easily be applied to any gage glass fittings without changes. Further information on request.

JERGUSON GAGE & VALVE CO.

WINTER HILL, SOMERVILLE, MASS.

Ford Instrument Company, *Inc.*

Rawson St. and Nelson Ave.

LONG ISLAND CITY, N. Y.

Gun Fire Control Apparatus,
Scientific, Mathematical *and*
Calculating Instruments,
Consulting Engineers

The SOUTHERN HOTEL

Baltimore's Foremost

NAVY
HEADQUARTERS

BOOK DEPARTMENT

The Institute Book Department will supply any obtainable naval, professional, or scientific book at retail price, less five per cent, postage prepaid. The trouble saved the purchaser through having one source of supply of all books should be considered. The cost will not be greater and sometimes less than when obtained direct from dealers.

Address SECRETARY-TREASURER
U. S. NAVAL INSTITUTE
ANNAPOLIS, MD.

Mention the Naval Institute—It Identifies You

Miniature Sword

Size 10 inches

Makes an attractive letter opener and desk ornament.

PACKED IN A NEAT BOX

This miniature is a perfect reproduction of the regulation naval officer's sword.

Gold Plated with plain steel blade....$1.75
Gold Plated with etched steel blade....$2.00

Meyer Made — Trade Mark

N. S. MEYER, INC.
43 East 19th St., New York
At your ship's service store or dealer

Trade Mark Reg. **EVERDUR** U. S. Pat. Off.

A COPPER-SILICON-MANGANESE ALLOY

The attention of Naval Engineers is directed to Everdur Metal as particularly suitable for engineering purposes. It combines the strength of mild steel with high resistance to corrosion. Send for Anaconda Publication E-2 (3rd Edition).

THE AMERICAN BRASS COMPANY
General Offices: Waterbury, Connecticut
Offices and agencies in principal cities

MOTOR CONTROL

DEPENDABLE IN ALL WEATHER

DEPENDABILITY—the first demand of the ship designer—is built into C-H Marine Motor Control because it is designed especially for sea service . . . a different type of controller entirely from those for commercial use.

Send for Marine Booklet No. 890

CUTLER-HAMMER, Inc.
Pioneer Manufacturers of Electric Control Apparatus
1217 St. Paul Avenue MILWAUKEE, WISCONSIN

Gould Battery

for Every Battery Purpose!

THE GOULD STORAGE BATTERY CO., Inc.
250 Park Ave., New York

Stainless Steels, High Speed Steel
Special Alloy Steels

Latrobe Electric Steel Company

8 West 40th St., NEW YORK, N. Y.
Works: LATROBE, PA.

REPUTATION

For years Stromberg has manufactured high grade plain tube carburetors.

STROMBERG CARBURETOR "The Accepted Standard"

Carburetors for airplane, marine, truck, and automobile engines.

"MAKES A GOOD MOTOR BETTER"

STROMBERG MOTOR DEVICES CO., 58-68 E. 25TH ST., CHICAGO, ILL.

SCINTILLA

AIRCRAFT MAGNETOS

Contractors to the

United States NAVY
United States ARMY

Offices and Factory :: SIDNEY, NEW YORK

The Atlantic Steel Castings Company

CHESTER, PENNSYLVANIA

Manufacturers of

STEEL CASTINGS OF THE HIGHEST QUALITY

INQUIRIES SOLICITED

YORK

YORK BRANCHES IN PRACTICALLY EVERY PORT
BOSTON
BROOKLYN
BALTIMORE
BUFFALO
CHICAGO
CLEVELAND
HOUSTON
JACKSONVILLE
LOS ANGELES
NEW ORLEANS
PHILADELPHIA
PORTLAND
SAN FRANCISCO

The YORK System of Refrigeration for Marine Service is the last word in safety, dependability and efficiency. Used on certain of the capital ships of the U. S. Navy and on many of the merchant carriers.

YORK
ICE MACHINERY CORPORATION
YORK PENNA

YORK SERVICE WORLD-WIDE
SEATTLE
TOLEDO
VANCOUVER
LONDON
HAVANA
BUENOS AIRES
HONOLULU
MANILA
SIDNEY
TOKYO
SHANGHAI
BARCELONA

ARMSTRONG

Drop Forged

WRENCHES *and* CLAMPS

Have Served the Navy for Many Years. They Are of the Highest Quality

ARMSTRONG BROS. TOOL CO.
CHICAGO, U. S. A.

TRADE AEM MARK

THERMOMETERS NEVER VARY

A. E. MOELLER CO., 201 SUMPTER STREET BROOKLYN, N. Y.

"AMERICAN"

FLEXIBLE METAL HOSE AND TUBING

Steam and Oil Hose

To Navy Specifications

THE AMERICAN METAL HOSE CO.

New York Chicago — Factory WATERBURY, CONN. — Pittsburgh Boston

NORTH AMERICAN REFRACTORIES CO.

Manufacturers of

PENNSYLVANIA, KENTUCKY, OHIO *and* MISSOURI FIRE BRICK

National City Bank Building, Cleveland, Ohio

Pedrick HEAT-SHAPED PISTON RINGS

Heat-Shaping is a distinctive process by which piston rings are made perfectly round. Moreover the process lends itself fortunately to production methods which accounts for the competitive price of this superior product.

Wilkening Manufacturing Co.
Philadelphia

The Arundel Corporation

BALTIMORE, MD.

Contractors
and
Engineers
and
Distributors of
Sand and Gravel

Voltage Regulated Generators *for* Airplaines

GENERATORS
STARTING MOTORS
and
IGNITION *for* MOTOR BOATS

Proven In Service

Built to Standard Specifications

The Leece-Neville Company
Cleveland, Ohio

REXOLINE
MOTOR OIL

Lubricates at Working Temperatures

SHERWOOD BROS., INC.
Continental Building, Baltimore

FORMICA

SHEETS TUBES RODS
Made from Anhydrous Bakelite Resins

Formica is a phenol laminated insulating material made in sheets, tubes and rods and in numerous grades with fibre and cotton duck base for radio and electrical insulation. It is approved and used by the Navy.

THE FORMICA INSULATION CO.
4614 Spring Grove Ave., Cincinnati, Ohio

Actual Size

The expedition to the Antarctic led by Commander Richard E. Byrd, after careful consideration, chose B. G. Mica Spark Plugs.

Col. Art Goebel Los Angeles-New York
18 hours 58 minutes

B. G. "HORNET" *Mica Spark Plugs*

The B. G. Corporation, 136 West 52nd Street, New York City
Contractors to U. S., Air Service, and Aircraft Engine Builders

PERFECTION — *the minimum specification for*

Hartshorn
Est. 1860

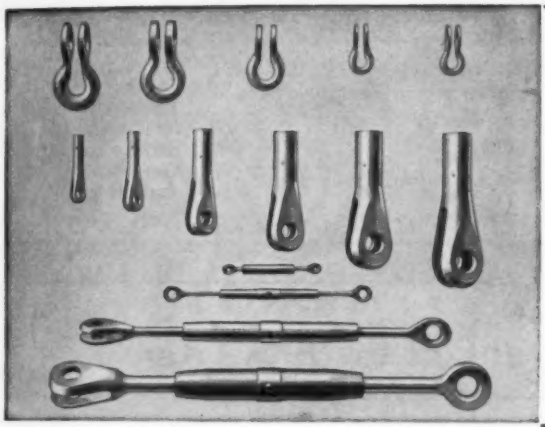
TIE—RODS

Through the stresses and strains incident to "service" and civilian flying, Hartshorn Tie-Rods have kept pace with, have anticipated, Aviation's needs, since early 1917.

They have always been built to U.S. Navy and Army specifications—the most rigid in the world. But Hartshorn permits even smaller tolerances and exacts even more rigorous service than Government specifications call for.

That's why many of the most famous aircraft in the world have been and are equipped throughout with Hartshorn Streamline and Square Section Internal Tie-Rods. *Write for Circular A-5.*

STEWART HARTSHORN COMPANY, 250 FIFTH AVE., NEW YORK CITY



STANDARD AUTOMATIC PRODUCTS CO.
Original Manufacturers of
STANDARD TYPE TURN-BUCKLES
Airplane parts of merit
TURNBUCKLES, CLEVIS ENDS, CLEVIS PINS, AIR-CRAFT BOLTS
(milled from bar)

Direct Contractors to United States Army and Navy and many airplane manufacturers

STANDARD AUTOMATIC PRODUCTS CO.
Corry, Pennsylvania

Complete Power Units With Any Type of Prime Mover

POWER, ELECTRICAL and INDUSTRIAL MACHINERY

ELECTRICAL Machinery, Steam Engines, Steam Turbines, Condensers, Gas Engines, Oil Engines, Hydraulic Turbines, Pumping Engines, Centrifugal Pumps, Mining Machinery, Metallurgical Machinery, Crushing Machinery, Cement Machinery, Flour Mill Machinery, Saw Mill Machinery, Air Compressors, Air Brakes, Steam and Electric Hoists, Farm Tractors, Power Transmission Machinery, Perforated Metals, Timber Preserving Machinery.

ALLIS-CHALMERS MANUFACTURING CO.
MILWAUKEE, WIS. U.S.A.

All Metal

STANDARD
PITTSBURGH, PA.
STEEL PROPELLER CO.

Adjustable Pitch

Tredegar Company

(Tredegar Iron Works Established in 1836)
RICHMOND, VIRGINIA

Makers of Target Projectiles, all calibres, for United States Navy and Army; also Railroad and Boat Spikes, Angle Bars and Fish Plates, Car Wheels, and Horse and Mule Shoes.

ROBIN BRAND WIPING CLOTHS

Washed and Sterilized—
Properly Graded—
Carefully Selected—
Thoroughly Inspected—
Guaranteed and Certified
Subject to Approval—

D. Robinson & Sons
1342 Harper Ave. Detroit, Mich.

BLISS

Bliss Sheet Metal Working Machinery is the product of over half a century of experience, accumulated knowledge and continuous improvement.

Builders of the Bliss-Leavitt Automobile Torpedoes

E. W. BLISS CO., *Brooklyn, N. Y.*

SHEET METAL WORKING MACHINERY
DIES, SHEARS
DROP HAMMERS
AND SPECIAL MACHINERY
ROLLING MILLS

W. MEADE HOLLADAY, *President* — CHARLES F. LEE, *Vice-President* — D. J. THOMPSON, *Cashier* — JOHN M. GREEN, *Asst. Cashier*

The State Capital Bank of the E. S. T. Co.

Church Circle & Gloucester St., Annapolis, Md.
"Naval Accounts Solicited"

THE ANNAPOLIS BANKING & TRUST COMPANY

ANNAPOLIS, MARYLAND

Capital, $300,000.00 Surplus and Profits, $150,000.00 Total Resources, $3,400.000.00

Depository of the moneys of the State of Maryland.
Depository of the moneys of the County of Anne Arundel.
Depository of the moneys of the City of Annapolis.
We handle and carry upon our Books more moneys of the United States Navy than any Bank in the United States.

JAMES A. WALTON, President — FRANK H. THOMPSON, JR., Treasurer

The Farmers National Bank of Annapolis, Md.

ESTABLISHED 1805

GROSS ASSETS
$3,046,928.15
STORAGE VAULTS

4% INTEREST ACCOUNTS
SAVINGS ACCOUNTS
SAFE DEPOSIT BOXES

Hall-Aluminum Aircraft Corporation

Design and Build light weight, efficient ALL METAL Airplanes and Seaplanes

2050 ELMWOOD AVENUE BUFFALO, N. Y.

Contractors to U. S. Navy

Alphabetical List of Advertisers

Allis-Chalmers Mfg. Co. 19
Aluminum Company of America 10
American Brass Co. 15
American Metal Hose Co. 17
American Oil Co. 23
American Society of Naval Engineers Cover III
Annapolis Banking & Trust Co. 20
Armstrong Bros. Tool Co. 17
Arundel Corp. 18
Atlantic Steel Castings Co. 16

Bastian-Blessing Co. 11
Bethlehem Shipbuilding Corp., Ltd. 6
B. G. Corporation, The 18
Bliss, E. W. Company 20
Boeing Airplane Co. 12
Busch-Sulzer Bros.-Diesel Engine Co. 24

Consolidated Aircraft Corp. 5
Crane Co. 7
Cutler-Hammer Mfg. Co. 15

Douglas Co. 12
Du Pont de Nemours & Co., Inc. 3

Ethyl Gasoline Corporation 11

Farmers National Bank 20
Ford Instrument Co. 14
Formica Insulation Co. 18
France Packing Co. 12

Gould Storage Battery Co., Inc. 15
Gulf Refining Co. ..... Cover II

Hall-Aluminum Aircraft Corp. 20
Hartshorn, Stewart Co. 19

Impervious Varnish Co. 23
International Nickel Co. 13

Jerguson Gage and Valve Co. 14

Kinney Mfg. Co. 13

Latrobe Electric Steel Co. 15
Leece-Neville Co. 18
Loening Aeronautical Engr. Corp. V

Meyer, N. S., Inc. 15
Moeller, A. E., Co. 17

Navy Mutual Aid Association 8
North American Refractories Co. 17

Pratt & Whitney Aircraft Co., The 4

Robinson, D. & Sons 20

Scintilla Magneto Co., Inc. 16
Sherwood Bros., Inc. 18
Sikorsky Aviation Corp. II
Southern Hotel 14
Sperry Gyroscope Co., Inc. 9
State Capital Bank 20
Standard Automatic Products Co. 19
Standard Steel Propeller Co. 19
Stromberg Motor Devices Co. 16

Titanine, Inc. 14
Tredegar, Inc. 20

Wilkening Mfg. Co. 17
Wright Aeronautical Corp. 2

York Ice Machinery Corp. 16

CLASSIFIED DIRECTORY OF ADVERTISERS

Airplane Manufacturers

Boeing Airplane Co.
Loening Aeronautical Corp.
The Douglas Co.
Glenn L. Martin Co.
Consolidated Aircraft Corp.
Hall-Aluminum Aircraft Corp.
Pratt & Whitney Aircraft Co.
Keystone Aircraft Corp.
Sikorsky Aviation Corp.

Aero. Equipment

Stromberg Motor Devices Co.
B. G. Corporation
Scintilla Magneto Co.
Wright Aeronautical Corp.
Standard Steel Propeller Co.
Stewart Hartshorn Co.
Eclipse Machine Co.

Aluminum

Aluminum Company of America

Automatic Products

Standard Automatic Products Co.

Banks

Annapolis Banking & Trust Co.
Farmers National Bank
State Capital Bank

Batteries

Gould Storage Battery Co.
Electric Storage Battery Co.

Brick and Cement

North American Refractories Co.

Coal

Berwind-White Coal Mining Co.

Contracting

Arundel Corp.

Diving Apparatus

A. Schrader's Sons, Inc.

Electrical and Power Equipment

Allis-Chalmers Mfg. Co.
Cutler-Hammer Mfg. Co.
General Electric Co.
Leece-Neville Co.
Sperry Gyroscope Co.

Explosives

E. I. du Pont de Nemours & Co.

Hose

American Metal Hose Co.

Hotels

Southern Hotel Co.

Insurance

Navy Mutual Aid Association

Instrument Mfg.

Ford Instrument Co.
Pneumercator Co., Inc.

Insulating Material

Formica Insulation Co.

Iron Works

Tredegar Co.

Machinery, Refrigerating

York Ice Machinery Co.

Motors and Internal Combustion Engines

Bethlehem Shipbuilding Corp. Ltd.
Busch-Sulzer Bros., Diesel Engine Co.

Navigational Instruments

Sperry Gyroscope Co.

Oils & Petroleum Products

Gulf Refining Co.
Ethyl Gasoline Corp.
American Oil Co.
Sherwood Bros., Inc.

Packing, Metallic

France Packing Co.

Paints, Dope & Varnish

Impervious Varnish Co.
Titanine, Inc.

Pipe Fittings

Crane Co.

Piston Rings

Wilkening Mfg. Co.

CLASSIFIED DIRECTORY, Continued

Pumps

Kinney Mfg. Co.

Special Metal Manufacturers

Standard Steel Propeller Co.
International Nickel Co., Inc.
Latrobe Electrical Steel Co.
Crane Co.
Atlantic Steel Castings Co.
The E. W. Bliss Co.
American Brass Co.

Steamship Supplies

France Packing Co.

Thermometers

A. E. Moeller & Co.

Torpedoes, Automobile

E. W. Bliss Co.

Tools, Power and Hand

Armstrong Bros. Tool Co.

Valves

Crane Co.
Jerguson Gage and Valve Co.

Welding and Cutting Equipment

Bastian-Blessing Co.

Wiping Cloths

R. Robinson & Sons

The
American Oil
Company

Affiliated with
Pan American Petroleum & Transport Company and its Subsidiary, Mexican Petroleum Corporation

General Offices
BALTIMORE, MARYLAND

PETROLEUM AND ITS PRODUCTS

IMPERVIOUS
VARNISH
Company

Manufacturers
Electrical Insulating Varnishes
Baking Enamels, Lacquers, Coil
and Special Varnishes

Koppers Building, 436 Seventh Avenue
PITTSBURGH, PA.

BUSCH-SULZER

3000 B.H.P. Busch-Sulzer Marine Engine

MARINE DIESEL ENGINES

Four 3000 B.H.P., 90 R.P.M., Busch-Sulzer Diesels are now in service driving U. S. Shipping Board 9400 dwt. freighters:

SAWOKLA CITY OF RAYVILLE CITY OF DALHART YOMACHICHI

The Shipping Board recently placed orders with us for two more engines, these to be rated 3950 B.H.P. at 105 R.P.M.

BUSCH-SULZER BROS.-DIESEL ENGINE CO.

Two Rector St.
NEW YORK

ST. LOUIS, MO.

Rialto Bldg.
SAN FRANCISCO

Join

The American Society *of* Naval Engineers

All Officers Are Eligible

The Society was formed in 1888 for the advancement of naval engineering.

Since that time the Journal has marked the progress of marine engineering and naval construction throughout the world. Each quarterly issue contains original articles on engineering subjects and an exhaustive digest of current engineering literature. Up-to-date officers read it and keep it for reference.

READ THE JOURNAL

Dues, Including the Journal, $5.00 a Year

Address

THE SECRETARY-TREASURER

AMERICAN SOCIETY OF NAVAL ENGINEERS

Navy Department, WASHINGTON, D. C.

U. S. NAVAL INSTITUTE
PROCEEDINGS